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BAY-DELTA ADVISORY COUNCIL)
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ORIGINAL

TRANSCRIPT OF PROCEEDINGS

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(All parties present, the following proceedings were had at 8:00 a.m.)

CHAIRMAN McPEAK: I have listed on the agenda for this morning the Chair's report and I dearly hoped that that would be given by Mike Madigan. It still might be given by Mike Madigan. We still might see our Chairman.

All I wanted to do under this item is reflect a little bit on the process of getting the framework document in better shape. Yesterday we were working on it and I said we needed to all think about how we could improve upon that document. What process would we use.

Lester and Steve and I chatted a little bit last night about the timetable that they're working on in refining, revising the document and when do we next meet. And between now and September 10th, it is likely that there will be two revisions or so to the document.

Yesterday, Lester, we were talking about probably the need to take the first part of that and integrate it with at least the Attachment B, or take Attachment B and integrate it into the document and start reflecting in that framework document all of the key issues that are delineating the CalFed

solution.

The principles, whatever we qualitatively and quantitatively are setting as goals, objectives, indicators, actions, and, you know, be able to take the 2,000-plus pages and start bringing it down to the guts of what we're making decisions on or trying to accomplish and the actions within one document.

Having said that, I have a suggestion for BDAC and I want to know if you think this makes sense for providing the feedback for agreeing to work off of a document that we kept trying to change, revise, improve so that we have something that we think reflects decisions that we're making here and advice to the CalFed agencies. There are perhaps three things at least that come to mind that we could be doing.

The first I would like to invite each of us individually to take the document as we have it today and mark it up. If you can go beyond saying, "Here's what I think is wrong" but drafting the -- proposing language that you want to see in it the way it is structured, that would be most helpful because staff is going to pretty soon -- pretty immediately be working on the next stage, the next generation of that document.

The second thing I want to ask is that the work groups use that document to now start also providing input from the perspective of the work groups so that the sections that relate to the topic and focus of the work group get reviewed in the work group and the comments come back as to what should be the changes, revisions, modifications in the document.

And the third is that I would like to encourage or commend to the caucuses that meet to also use that document. I'm, you know, aware of at least four that -- four caucuses that are having a lot of ongoing discussion and dialogue.

There's the Environmental Water Caucus -- thank you for the reception last night -- there's the Ag Caucus, there's the Urban Caucus, Ag and Urban are also talking to each other and I guess you're now also talking to Environmental, so that's great, and the business community.

There may be yet other caucuses, I'm not trying to limit how many caucuses get established, you go do it, have a great time, but in your own meetings where you are gathering, could we use the document, get -- or use those forms as a way to get input back on the document. And when I say "input,"

I really am talking about proposed language, what you want to see in it, what is the answer, not just what is the problem with the document, okay?

And then I had another thought about it because I'm going to share with you how I am approaching that document. You may not like this approach but it works for me. I suggest that it's a document in which we all bet that we're right and that we're willing to bet that the other parties are wrong because we've got some right now immutable problems.

Now, what does it mean to bet that you're right. If you make a bet, you are betting that something that is observable either will or will not happen. It's not an ideology, it's not a philosophy. You know, either horse one or horse two is going to win.

And so the way that I view these issues when I've got a different position than Alex -- that rarely happens, right -- is that, okay, let me tell you what I think we should do, and if I'm right, here's what we'll observe. But I'm going to allow for the fact I'm wrong and Alex is right.

And so if that's true, we then go to Alex's solution, always sort of taking an approach of what

is going to have the least damage or least impact on the environment, the most optimization of the efficient management practices, and allowing for the fact that others may actually be right and I'm wrong and therefore we opt then into their course of action. Anyway, that's the constraint I'm using. It sort of begins to clarify exactly how certain are we about our position.

Having shared my own approach on this, betting that we're right and allowing for the fact that the other person is wrong, are you comfortable with this notion of we draft or mark up the document individually and send it back, okay. What about working -- using it in work groups?

Martha, you -- okay. And just I would urge the caucuses to do the same thing.

Martha, did you have a comment?

MS. DAVIS: Yes, she said that she was going to get Ronnie to do the comments.

CHAIRMAN McPEAK: I think Ronnie should all boycott you and force you -- I mean, you know, Ronnie did the hard work of reading through it and commenting on the document so that everybody can either accept those or we can get sued.

Right now, what I'm suggesting is no, you

can't default to Ronnie's kind of work any longer. You have to say what to do about it. That's the distinction I'm making, okay?

Alex?

MR. HILDEBRAND: I agree with your approach but thinking about the fact we don't have another meeting for two months here and that things need to move along, it's a question of how we move it along during that period. And I would suggest that we send in these comments as you suggest and where the staff doesn't find any big conflict among the comments from different parties, they might go ahead and adopt it.

CHAIRMAN McPEAK: Yes.

MR. HILDEBRAND: Where they do see a big conflict, they can then identify that and put it on the agenda for discussion for the next meeting.

CHAIRMAN McPEAK: I like that very much.

And, of course, Alex sets the standard for how prompt and how thorough the comments should be. So everybody should do their homework like Alex.

Okay. I heard Steven and Mary say that that's a good idea. We'll follow what you suggested, Alex.

All right. We're now going to turn to the

fisheries.

Oh, yes, Tom.

MR. GRAFF: The joint release that the Governor and the Secretary put out yesterday mentioned a revised framework by the end of the month. Should we -- will that be substantially revised, in which case we wait or not substantially revised, in which case we don't wait?

CHAIRMAN McPEAK: I would actually try to get your comments in now because I think that Lester is going to be revising it.

{?}: We had -- as you may know, we had a CalFed policy group meeting Tuesday and Wednesday of this week and we're getting comments from the agencies by the close of business today. And so we plan on trying to turn around the draft early next week and incorporate what we've been getting from the stakeholders as well as the agencies so we have an updated version.

And actually, it was the intent of the Secretary and the Governor to try to start drawing the maximum attention to that revised document. This document is still in pretty close circulation, I mean, within the stakeholder community and I think this next one we want to do a much larger

distribution of.

So I guess Tom -- there's kind of two answers, two time frames, comments that people already have, if we have those today and Monday, we can incorporate them in. Otherwise, you'll probably want to look at the draft. It will be available by the end of the week. Probably the 24th.

CHAIRMAN McPEAK: Okay. Thank you. Thanks for that question.

As I had told you, we shared with you yesterday, we are expecting Mr. Cahill (phonetic) from the Governor's office to be joining us. He'll be here probably around 9:30. And so as we proceed with the agenda, what we want to do is -- we may very well be in the panel discussion by the time he comes.

I just want to let the audience and the panelists know that we will complete the presentation from whomever is speaking on the panel and then do, if you will, a suspend that, recess that and -- for the time that we then take Mr. Cahill and finish that and then go back with the panel.

Lester and Steve and Mary, are we ready to move to the report on the expert panel for

fisheries?

Yes. Okay. Then this agenda lists Ron Ott (phonetic) and Pete Chadwick to do the report. Are we going directly to them? Any further comments?

Okay. Thank you.

Mr. Ott and Mr. Chadwick, you're on.

MR. OTT: Good morning. Are we on now? Thank you.

CHAIRMAN McPEAK: You're on now but you're standing in front of your own overhead so you --

MR. OTT: Right. Thanks.

Back when we put out the EIS draft, EIS/EIR, and part of that was a Phase 2 report, in that Phase 2 report there was a section on fisheries that generated a lot of issues, brought a lot of issues to light. And in the management policy and in BDAC those issues were brought forward and it was decided that we needed to get a special committee together to start addressing these issues.

We did assemble a team in early January. Representatives from the Fish and Wild Service, Department of Water Resources, stakeholders like CVP water users, they institute other stakeholders from Metropolitan Water District. We had all the

agencies' representatives and a group of stakeholders that had other stakeholders behind them that were represented. And we had our first meeting in the first part of February.

Of all the issues that were brought out in the Phase 2 report -- there was a number of them -- there was about 20 questions that everybody would love to have answers to. But they really boiled down to three primary issues that they said that we ought to address as soon as we can.

The first one is what species, populations, their life stages, when and where in the Delta are they impacted as a result of diversions. We need to know that for each one of the alternatives from no-action to Alternatives 1, 2 and 3 and of course existing conditions.

The next thing they wanted to know is what degree of benefit would we derive for these fish species if -- from just the common programs alone.

And then the last one, the big question is -- well, excuse me, Pete, stay on that one more -- thank you.

The last question is what is the risk and chances of success of recovery of these species with the particular alternatives that we have. So that's

a big, big question.

And then they asked one more question -- Pete, go ahead, thank you -- is if they don't come to recovery and we do still have major impacts with these particular alternatives that we had in our Phase 2 report, what modifications can you make either structurally or operationally to these alternatives where you could head towards recoveries.

Next slide.

So this team got together and assembled, and some of the basic assumptions they had to make in order to perform their work in the time period that we had and with the initial group that we had, and those are important to bring out, the biological scope, we couldn't address all species so we addressed three major species of interest:

Four runs of salmon on the Sacramento River, one run on the San Joaquin River, striped bass and Delta smelt. We figured if we could get through those, then we could -- then we could tackle things like American shad, steelhead, sturgeon and split tail.

So that's one of our limitations. We just dealt with three primary species.

The other one is geographical scope. On this first round, we just addressed ourselves in the Delta and Suisun marsh area. We did not take on the upstream benefits that we get from ERP, we did not take on the downstream benefits that accrue from actions that you make take on offshore. We limited ourselves so we could get to an answer on geographic scope and later on Pete Chadwick will get more into that when you talk about our results.

Next slide, Pete.

Process. In the time period we had we used the models and data that were right at our fingertips and that people could bring in on the table. So most of it was based on professional judgment of people that have been involved in this process for many years. Multiple sources of uncertainty were certainly considered.

Biological processes, we're going to talk about uncertainty a little bit later because you'll see in our report that we have a lot of uncertainty, but there's different types of uncertainty that will be split out from that.

When we started to run this, we needed to know where the water was going to go. So as you saw in the Phase 2 report, we had the basic alternatives

and we had initial runs with operational constraints and base case runs.

We used those as our first surrogate to look at the impacts. So we only had one model run for each alternative with no storage in it, one with maximum storage which was 600 -- 6.2 million acre feet. So that was -- that was the limitation. But it would at least give us a starting point that we can work from.

Next slide, Pete.

Common programs. We know there's a lot of benefit for common programs. Exactly where that habitat is going to be placed, given a certain alternative, was not clear at this time. We clarified it a lot more so we have a lot of uncertainty of the value of the habitat at a certain location and exactly where is it.

So for this first run, as you'll see later on, we factored more into the ERP stuff from where we're going from now on so this -- we're going to try to minimize the uncertainty here.

Water quality. We know we have a lot of effects of like metals coming down the Sacramento River, pesticides, herbicides coming down the river systems that go into the Delta, what are the

long-range effects on fisheries of these. So we actually started working with the Water Quality Committee to actually give this a bigger, a more in-depth analysis. But that was a limitation of the studies you saw.

And, of course, exotic species, we have a lot of exotic introduced species in the Delta itself but this team I thought was the important conclusion that they reached, they said, no matter that we do have newer species and they will alter the estuary, we do not see exotic species, how they're introduced making a difference in the way we evaluate these alternatives against each other.

That's a big -- that's a conclusion I thought was pretty pronounced. We don't see the difference between them changing. It could change the whole system but it doesn't change the difference.

Go on, Pete.

Thank you.

A report that you have in your packet we have sent that about three weeks ago to the American Fishery Society. They are reviewing that with a, what they call an anonymous panel. They did the same thing on the Columbia River system for Columbia

River salmon for the five-state compact which basically says they'll review and tell us did we use logic in how we put this together, were there other models other places that would have really helped us get to this answer better, and what do we do with the information as we have it now. What's the range of certainty and uncertainty.

And they're going to give us their input on that and that will be available by your next meeting. And who will come to do that is Paul Brohaw, the executive director of the American Fishery Society, will come and give that report to you of how he sees this report by then.

Go ahead, Pete.

So our process, how did we go about doing this. We're called the DEF team now. You notice we started off being the Diversion Effects on Fisheries team. We couldn't make up an acronym for that so now we're just the DEF group. And you'll see later on the policy gave us a charge so now we call it the Policy Depth Charge.

So we started off, how do we -- how do we go about doing this. And what we -- we had a lot of consideration of all the factors that would impact the species and life stages, and here's a listing of

them, a lot of them:

Entrainment, how the water flows and the patterns of flows in the Delta. The predation level on each one of the species. Once we -- if we salvage them, how do we handle them. What's the food supply that's provided by each alternative or what food supply is limited by each alternative.

Things that came out of the ERP, like shallow-water habitat, water quality we talked about, we didn't address that except for the salinity, as you'll see, salinity component. And agricultural diversions which were mostly diversions that are in the common programs. And then we have issues of strain, which you'll see a little bit later.

To give you a sample of what the teams did, I'm not going to go through this matrix, but this is just Alternative 2 from the smelt point of view for a wet year. The variables that we talked about here, hydrodynamics. When they did the hydrodynamics, they looked at the cross Delta flow, the Q west, (inaudible) river flow at Bacon, Sacramento River flow and San Joaquin River flow. And then they rolled it up into a hydrologic's judgment.

And what this basically says, we don't have to read the numbers, but red is bad and deep purple is blue -- what's the name of that character? Barney --

CHAIRMAN McPEAK: Barney.

MR. OTT: Everybody wants Barney 'cause they want it all to be purple. So we'll think about it.

So we went through this for the wet years and you can see up here we still have a lot of impacts for Delta smelt for Alternative 2 in this whole area, but they're really pronounced in May, June and July.

Go to the next one.

You go to a drier period when the smelt move up further up in the Delta, are more dispersed, you'll see that we even get more entrainment effects and it even turns more red, but it also turns -- we get more benefit out of the agricultural screening diversions that we've done in the common programs.

So between wet and dry, the wet -- the dry period gets better because we get better, more positive benefits from screening when the smelt move up to where all the screens area, than we did over the wet period.

CHAIRMAN McPEAK: Ron, Eric has a question.

MR. HASSELTINE: On those last two graphs, the difference between the yellow, orange and red is some subjective view of the difference in impact?

MR. OTT: That's -- that's good, Eric. Each team was allowed to figure out what -- zero was no change or no impact. So if it was red -- if it got deeper towards the red, it says it had negative impacts over no change and when it went to the blue, it said it had a positive benefit over no change.

Now, what that zero is was addressed differently by each team. The salmon team just said, "It's relative how we feel about the fish as they are now." The striped bass team said, "We'll set zero on their first round, we'll set it back to pre-project conditions."

So we let each team do that and as you see, when Pete talks about it, we said "That was great that you did this on this individual basis but now we got to roll it up so they're all consistent and make sense." And we're moving into that.

But we let each team, to answer your question, Eric, we let them set what zero is and

what the change from that particular base was.

MR. HASSELTINE: Okay. Now, but you've got numbers on there, too.

MR. OTT: Yes.

MR. HASSELTINE: And -- first of all, I don't know what the significance of the numbers is, but does it mean that a minus three is three times worse than minus one, and if so, on what scale?

MR. OTT: It's -- let's -- let us agree if I can answer that a little when we roll them up --

MR. HASSELTINE: Fine.

MR. OTT: -- or else we'll be addressing each team --

MR. HASSELTINE: That's fine. I just want to make sure that I understand as we go along. Because the last time we had this presentation there were some very subjective bar charts where significant differences were being shown between the different alternatives, and the conclusions were that therefore because of these bar charts, one was better than the other but you don't know how much better.

MR. OTT: Yeah, that was --

MR. HASSELTINE: And you don't know what

the magnitude of the overall difference really is and how to factor the fish diversion issue in with all the other issues that affect the alternatives.

MR. OTT: Okay.

MR. HASSELTINE: So I mean at some point we need to know whether the fish are driving this whole thing or whether they're just another factor of equal issue to take into account.

MR. OTT: On this -- on this first case that we let them set their absolute scales, it usually ran from about minus three to plus seven. But if we can when Pete gets into it, he'll actually put definition to that.

MR. HASSELTINE: Okay.

MR. OTT: What that rate -- we're always wondering what the bottom of it is, what the top of it is and what the differential between the numbers are.

Next slide, Pete.

They got -- some groups got pretty fancy I thought. This was Alternative 2 where you took Alternative 2 and you subtract -- you got the Alternative 2 with the common programs and you subtract it out the existing condition. So this was the benefit that you would see of Alternative 2.

And as I mentioned before, if you just looked at this particular bar diagram, you'd see in wet years we had a lot of benefits, especially March, April, May, June for smelt from just the ag diversion screening. We also had more food supply source from the common programs in the months of April, May and -- March, April and May.

In the dry periods the food source was better because the fish are back up where we're doing most of the ERPP work, plus we had a lot more diversions because the fish are moving up where -- they're in an area of impact diversion so the alternative did more good there.

So taking that as just as an example of what one team did, what I'd like Pete to do is this ominous task of taking results of each one of these teams, bringing them together so we can look at all three of them at the same time.

Pete.

MR. CHADWICK: So I'll be doing that and then following up with discussion of where we're going from here in this effort.

First of all, I've got several slides here that are sort of broad summaries of benefits and detriments associated with each alternative in

relation to a no-action. The primary effect of this is to cancel out differences in flow because with the single operation studies that we have, if you go back to the Phase 2 report, there is not much difference in flows in the system, total flow, between the no-action and the various alternatives.

So in Alternative 1 there are benefits from the common programs, we can come back to more detail on that.

Also, there are benefits from the improved fish screens in the South Delta. The -- each of the alternatives involves replacing the screens at the state and federal facilities with state-of-the art screens so there's some significant benefits that vary by species in Alternative 1.

For Alternative 2, the benefits in general are from the common programs again and from the improved fish screens in the South Delta.

Third, there are some significant improvements associated with the fact that in the San Joaquin part of the system there are better flow conditions downstream in the mouth of the Mokelumne with Alternative 2.

On the negative side with Alternative 2, there are consequences associated with reducing

flows below Hood in the Sacramento River. There are consequences associated with the fact that there are now fish screens at Hood on the Sacramento River. The -- and for Sacramento salmon, for example, while those screens are expected to have very high efficiency, you're exposing a much larger fraction of the population to those screens with a low impact but nevertheless cumulatively, there's a concern about the effectiveness or the consequences of those screens.

There are concerns with Alternative 2 about increased entrainment of fish along the eastern side of the Delta with that amount of water being -- that's being taken that way and -- I made a mistake when I was reading this quickly. The fourth point is really the entrainment losses.

The second point pertains to another aspect of the screens there; that is, at the Hood diversion with Alternative 2, there will be fish screens. Behind the fish screens there will be a pumping plant and there will be thousands of upstream migrants of the various species that will be migrating up the San Joaquin River, up the Mokelumne to this -- the back end of these screens, and we've got to get them past there. And the teams felt that

that was a significant issue.

Going on to Alternative 3, again we have the benefits of the common programs and the improved fish screens in the South Delta. Now instead of improved flows only below the Mokelumne River and the San Joaquin side of the Delta, there are improved flows throughout the San Joaquin Delta. And then there's a major consequence of approximately 80 percent reduction in exports from the South Delta.

The detriments are two that carry over from Alternative 2. The reduced flows below Hood and the entrainment losses of the Hood fish screen are to all intents and purposes equal between Alternatives 2 and 3 so it carries over as a detriment in Alternative 3.

If we go on -- and we have summarized the various matrices that are in your report and in a table that is not included in your report, and let me describe this.

First of all, to set the stage, coming back to Eric's question, what is the significance of these numbers. The -- as Ron pointed out, the matrices were somewhat different for the different species because of assumptions made by the

individual groups. So at this point in time, we went back and set existing conditions in all of the alternatives to zero. So zero means abundance is likely to be similar to existing conditions.

And then we scaled up and down from that and asked the teams to define their perception of the consequences of the different levels of pluses and minuses.

Minus one to minus three, we end up describing as decreases in abundance are likely, and that's obviously opposite to the effect of the goals of the CalFed program.

Alternatives 1 and 2, small increases in abundance at best, unlikely to achieve CalFed program goals.

Plus three to plus five, increase in abundance likely. May achieve program goals.

Plus six or seven, highly likely to achieve the goals of restoration and recovery that CalFed has.

One more qualification that I need to make, and that is that you can't make comparisons up and down the chart among species for exist -- because existing conditions differ. They are -- let me illustrate with Delta smelt.

The analysis indicates that under existing conditions, the conditions for Delta smelt are substantially worse in dry years than in wet years. But when you set both existing conditions to zero, that gives you the illusion that, you know, that they're the same. You've canceled out that difference. So this chart is designed to get comparisons going across alternatives and not across species.

I want to point out several significant conclusions from this chart. One is that the common programs are viewed by each -- were viewed by each of the teams to produce what we would call significant benefits but not getting anywheres near the kind of goals that we are seeking in CalFed by themselves.

And before I go further on that point, let me -- let me emphasize one of the qualifications that Ron pointed out, and that is, we're talking only about conditions in the Delta and Suisun Bay here. This does not -- the common programs will have any number of activities going on upstream and to some extent downstream in the Delta and Suisun Bay, and those effects are not included in this analysis. And we'll come back to that in a minute.

You can see that Alternative 1 -- okay, let me also point that each of the alternatives has the common programs as part of them. So when you look at Alternative 1, it indicates that you're not gaining much in rela- -- if at all, and in some cases you're going backwards from the common programs.

Alternative 2 tends to go -- tends to go down in relation to the common programs. In other words, you're losing ground with Alternative 2.

With Alternative 3, you're making significant incremental benefits for San Joaquin salmon, Delta smelt and striped bass but you're not making additional incremental benefits for salmon on the Sacramento system, in the opinion of the teams. That is a different kind of conclusion than has been reached in relation to Alternative 3 before.

It tends to be a function of two things: One is that the team placed more emphasis on the significance of reductions in the flow below Hood on the survival of salmon, smelts migrating down the Sacramento River.

And one of the other differences in relation to a historical analysis is that historically the -- we expected the Delta cross

channel to be open frequently during the period when salmon are migrating downstream. Now we have achieved a substantial degree of protection for salmon by closing the Delta cross channel during most of the downstream migration period for salmon. So you're comparing no diversion with a screen diversion and that is less favorable.

Going on to -- what's next?

Okay. The population analysis issue, as we described we're analyzing conditions in the Delta and Suisun Bay. For Delta smelt that's basically it. You know, they live in that area, they're not migrating out of it so what you see is what you get as far as the analysis and it applies to the whole of the CalFed program and the accomplishments of it.

For striped bass, this is somewhat less so. There are issues about striped bass behavior in the ocean, for example, and how that relates to the fishery. So there are some striped bass issues outside of the Delta and Suisun Bay.

For salmon it's a huge issue. Obviously, salmon have to be able to spawn upstream in the Delta. There are lots of conditions upstream that are affecting them. The CalFed program has a major emphasis on improving conditions upstream. There

are substantial issues about the ocean fishery, both recreational and commercial that are -- the program is committed to considering and addressing.

So we have to get over that issue before we get done with this process. We are adding people to the team to start looking at that issue. It's a substantial effort. We're attempting to deal with that by October. So you're going to see a couple more months where you're looking at the -- not having an integrated consequence of the CalFed program across the board for salmon.

Local peer review. There's a team of people that's put this together but there are a lot of other people around in the community that have not participated in the process that we're seeking input from, both within the agencies and outside of the agencies. Ron already mentioned the AFS peer review.

The most significant next step, though, is optimizing the alternatives.

If you go to the next chart. Let's see, we pointed out that these analyses were based on a single operation study of the alternatives as they're described in the Phase 2 report. We are going to be looking at both changes in the structure

of the alternatives and changes in operations.

We've put together a team of people that includes the Delta -- the team that has been working on it with input from Fish Facilities Team, Water Quality. The no-name group is an internal acronym for a group that's working on operations analyses primarily related to water supply, but there are fisheries people on it to interact so that those water supply augmentations take into account fisheries' consequences. The operations folks from the projects as well as the modelers would need to have input into this.

And the -- the first charge that the policy folks have given us is to develop a through-Delta alternative that optimizes the benefits and minimizes impacts -- and minimizes impacts to fisheries while considering water supply and water quality, to develop specific actions that would be included in Stage 1 implementation.

I would point out here that you're looking at the July 8th draft that has a list of specific actions for Stage 1. The diversion effects team and the no-name group are being asked to examine that list as -- in relation to our total charge and come back with recommendations relative to that list.

Then we would evaluate, do implementation based on CalFed's contingent strategy which is described in the July 8th paper on staging.

Indicated we would consider operational changes. This is a list of potential ones, it's not intended to be all-inclusive but you can see the kinds of things we would be looking at.

Structural changes, hydraulic barriers, changes in points of diversions, the South Fork Mokelumne route, various things related to the Clifton Court Forebay issue, storage options.

And then the common programs we've again mentioned we've got to consider upstream actions, particularly related to the ERP. Making changes, it's within our purview and expectation that we are free and expected to make proposals for changing the common programs if we feel that's appropriate.

We've got -- let's see, the specific charges, yeah.

As a result of the policy meeting Tuesday and Wednesday it became more specific in the charge that -- and it is now defined as follows:

To develop one or more best through-Delta options for fisheries while considering water supply, interacting with the other groups that are

involved in this process, include both operational and structural actions, determining the ability of the options to recover species within Delta actions.

The general reaction of the policy group people was that we weren't achieving high enough benefits with the -- in the analysis that's already been run. That's why we're going back to do this. And, as I pointed out, we're adding experts on upstream issues.

Develop a list of in-Delta actions for Stage 1. So in addition to looking at the long-term, we're charged with coming up with specific actions in Stage 1 to include in the document.

Step 2 is to repeat the process basically for through-Delta conveyance that is -- on a contingency basis -- for dual. Pardon me, I misspoke.

And then finally, determine the risk on potential success of species recovery for the through-Delta and contingent dual conveyances, considering all the actions in the CalFed program, i.e., integrating the upstream and downstream actions with Delta actions.

Roughly, we're talking about targets of

doing the first stage, the first set of that assignment in a month, the through-Delta -- or the dual conveyance the following month, and this being a target for October.

Are there questions of Ron or myself?

CHAIRMAN McPEAK: Roberta, and then Ann.

MS. BORGONOVO: When you take a look at the charts and you see the negative effect of through-Delta, are you actually looking at a different configuration for through-Delta than Alternative 2?

MR. CHADWICK: We will be considering different, you know, physical differences. We're also considering operational differences. The -- you know, some of the -- you know, one of the most obvious ones, for example, in the operation studies that were run, the -- there were no provisions for curtailment at Hood, which has always been the accepted way to protect young striped bass coming down the Sacramento River.

There are, you know, many other operational issues like that that need to be considered. So that the -- the initial operations studies were, as they were at Phase 2, they did not consider some of these specific fishery needs. So there's a lot of

issues like that too, Roberta.

MS. BORGONOVO: And looking at the matrix, it also looked as if in all of the alternatives, storage really is not only not a lot of help but a detriment.

Can you just comment on that?

MR. CHADWICK: Yeah.

MS. BORGONOVO: Did I read that right?

MR. CHADWICK: We -- the only team that explicitly analyzed that was the salmon team. And what was being looked at there was the consequences in the Delta of changes in flow or diversions resulting from the maximum amount of storage CalFed is conceding -- considering.

So it was an all-or-nothing, and this did not address upstream issues, just in-Delta, what kind of changes in flow or diversions were seen as a result of that and these operation studies and then an estimate of what the consequences were.

It's a little -- from that aspect it's somewhat misleading because it was looked in a -- there was an additional piece in the analysis and that was the ERP flows which weren't tied to a specific source, and there were some benefits attributed to the ERP flows because of the changes

that they made in flow. And those aren't really integrated.

How much of that would come from storage as opposed to some other source such as water transfers or something like that, wasn't -- isn't resolved at this stage so there's a -- but basically, as you store more water, if you're not releasing it to the Delta at times that it's helpful to fish in the Delta, you have the potential of causing adverse effects. And that's what you're seeing.

MS. BORGONOVO: One last question. Did you read the X2 standard where it is now in the water quality standards for all of the model runs?

MR. CHADWICK: Yes.

CHAIRMAN McPEAK: Ann?

MS. NOTTOFF: As you went through there, you acknowledged the fact that the analysis is limited just to the Delta and Suisun Bay. And then -- but then I noticed -- and that there were upstream and downstream consequences and issues that had not been integrated into this analysis.

But then when you went through the next steps and the type of actions you're considering and even the policy charge, I noticed -- it seemed that you were expanding actions there to deal with

upstream issues, but I didn't see any kind of corresponding expansion of your analysis to include downstream Bay and ocean, either putting experts on your panels or looking at that.

How do you --

MR. CHADWICK: The intent is to include that.

MS. NOTTOFF? Oh, it is? Because your slides just say upstream experts.

MR. CHADWICK: Okay. I'll fix it.

MS. NOTTOFF: They don't say Bay experts.

MR. CHADWICK: Okay. The -- some of the -- some of the people that are involved on the team are fairly familiar with Bay issues. Probably, Ann --

(End of tape)

MR. CHADWICK: -- will be -- this is a pretty general analysis, we're not getting into site-specific analyses.

The degree to which we need to add additional people for that I think remains to be resolved, but the charge includes considering the whole of the CalFed actions. If we end up concluding we need some additional people to bring

in, we'll do that.

We're not -- let's see, to some extent what we're doing is we develop a specific issue where we have a specific information need or a specific kind of recommendation for actions and farm that out to individuals or several individuals, and have them provide the input back rather than adding all -- you know, everybody to the -- to the -- involving them in the whole exercise. So we may end up reaching out for some Bay issues in that fashion also.

CHAIRMAN McPEAK: I think it would help clarify to see, you know --

MR. CHADWICK: Yes, fair enough.

CHAIRMAN McPEAK: -- what you've taken into account in the next phase to explicitly state that you're looking at Bay and ocean.

MR. CHADWICK: I agree. That's a good point.

CHAIRMAN McPEAK: Okay. I've got Pietro, Alex, Richard and then Martha.

Pietro.

MR. PARRAVANO: Thank you, Sunne.

In that matrix there, did you take into account under the Sacramento River salmon any recovery plans for the endangered species?

MR. CHADWICK: We -- let's see, there are provisions in the -- in the plan that are incorporated in the existing operations studies, so to a degree the answer to that is yes.

The analysis for the Sacramento salmon, we attempted to integrate the needs of all four runs, you know, consider when we're making a decision about how good this plan is in October, for example, we consciously went through and said, "Okay, well, what's winter run doing, what's spring run," et cetera, and we tried to integrate it into an -- into one estimate.

Obviously, when it comes down to a management standpoint, this program is eventually going to have to be subjected to individual analysis on each of those runs, particularly for the endangered species. That is part of the charge that the policy people have given us in relation to the whole of -- the effect over the whole of the salmon population and the Delta smelt population is, what are the implications for Endangered Species Act.

And there will be -- that will be -- that is -- so that also will be a consideration during this next round where maybe some of these operational -- you know, we're getting into more

detailed operational considerations and, certainly, some of those operational considerations that we put forward will be -- have in mind specific needs of the various endangered species.

MR. PARRAVANO: It would seem like that would change the matrix if, once you undertake certain -- undertake the recovery plans, it would change the numbers on that matrix --

MR. CHADWICK: Yeah. The -- the general implication of this -- of this analysis is that based on what CalFed would -- let's see, if we just did what the operation studies provide for now and what the physical -- what physically is provided in the CalFed program in the Delta, you're not going to achieve the recovery goals.

And that's part of what this analysis says and part of what the policy people said, you know, that's not going to be acceptable. We've got to go further than that and we've got to consider some of those specific needs, and so on, to get better results.

MR. PARRAVANO: I guess what I'm hearing is that we have two parallel approaches. One is to implement recovery plans for the endangered species, which will take us to a certain end result. And

then we've got a parallel program called CalFed which might fall short --

MR. CHADWICK: Well --

MR. PARRAVANO: -- of that end result.

MR. CHADWICK: Yeah. No, that -- those will be integrated. Yeah, definitely -- definitely are going to be integrated. I mean the directors of Fish and Game, Fish and Wildlife and NIMS are sitting on the CalFed policy program and, you know, they're going to insist on that integration occurring in this program.

MR. PARRAVANO: Okay.

CHAIRMAN McPEAK: Alex.

MR. HILDEBRAND: I think we are seeing here a lot of progress on a very complex and difficult subject and Pete and Ron need to be complimented along with their collaborators on this.

I do have a few questions. You've indicated that where you go from here includes analyzing the changes in the alternatives that would improve them. I think some of us would like to have the opportunity to work with you on what those changes are that you're examining as you go along rather than have you come back to us at some two months from now and say, "Here's the alternative

that we analyzed."

The -- Ron mentioned at the beginning that you decided that exotics would not change the relation among alternatives. I don't particularly question that but if you take Delta smelt, for example, and if the exotics are a substantial impact on Delta smelt, then the direction of benefit to Delta smelt might be the same as you depicted here but the magnitude might be greatly reduced. And also, the feasibility of recovering the Delta smelt might be greatly reduced.

So I think we need to have some analysis of that question as to, in other words, you start out with your diversion being a major consideration but if diversion is not the dominant consideration in respect to recovery of Delta smelt, then we should recognize that.

MR. CHADWICK: I -- I agree with you. You know, I agree with you a hundred percent. You're asking for what -- the consequence that you hypothesized that you might not reach recovery of one group or another because of exotics, you know, I've got to agree with. From past discussions, I'm sure you'll appreciate that our feeling is it's going to be very, very difficult to reach those

conclusions, but an analysis --

MR. HILDEBRAND: I appreciate it being very difficult but whatever we can do is better than not trying I think.

MR. CHADWICK: And it's certainly important to acknowledge that, Alex, I agree.

MR. HILDEBRAND: Yeah.

Then another thing I'm interested in seeing is what mechanisms you have in mind for getting the upstream migrants past the screens in Sacramento.

It isn't quite clear to me why you can't -- why you can't just intermittently open that up and let those fish go through. In the state of nature you just see the upstream migrants accumulate at the base of a small stream and wait for a flush that can permit them to go on up. And it would seem to me you could do the same thing here.

Now, I'm no expert on that --

MR. CHADWICK: Right.

MR. HILDEBRAND: -- and presumably you've got an answer to it, but I think I'd like to see just what mechanisms you have had in mind and why they won't work pretty well.

MR. CHADWICK: There -- there are specific mechanisms in mind, some of them going --

undergoing fairly detailed engineering and biological analysis right now. The -- and the fish facility technical team is telling us, "We can solve this problem."

The biologist, the more general biologist or the biologist that, let's say, is an expert on salmon tends to look at that conclusion with some degree of skepticism --

MR. HILDEBRAND: Uh-huh.

MR. CHADWICK: -- you know, based on experience like Red Bluff diversion dam, the kind of concerns that are actually being raised about the Montezuma salinity control structure where the structure is open all the time on outgoing tides, and yet some of the salmon biologists are arguing that they believe that there's some adverse consequences of delays there.

And we're talking about here something that's really at the heart of the migratory runs of these fishes. We're talking about thousands of them. You know, and it's not a couple hundred fish, it's tens or hundreds of thousands. And so the issue is -- you know, the issue is not -- is not trivial.

But it is being analyzed and we'll -- when

the -- we'll see as the analysis gets further along what degree of comfort that provides to the teams.

MR. HILDEBRAND: I'm certainly no expert on this but I can see that the situation here is quite a bit different from the ones you described and would appear to me to be easier, so I think we on the BDAC might like to be better informed on that.

And I guess what you're telling me is this may be a problem, it may not.

MR. CHADWICK: I think that every one of the biologists that were on these evaluation teams is convinced that it's a problem. The technical fish facility people are telling us, "We can solve it." And whether we can get to the point where the analysis has gotten to the point that it gives a lot of comfort to the teams remains to be seen.

MR. HILDEBRAND: Uh-huh.

MR. CHADWICK: But we can certainly share the analysis and I'm sure that if you want, you know, specifically to get better informed, we can do that, certainly.

MR. HILDEBRAND: Thank you.

CHAIRMAN McPEAK: We have -- this is a very important issue, very important, so we're

spending more time on it than the agenda allowed. But I've got three more people and I do want to take them and then we'll just conclude this component of the agenda.

Richard, Martha and then Ryan.

Richard.

MR. IZMIRIAN: A major intervening variable on the Bay and Delta -- rather on the Delta and Suisun Bay is food supply. That is allegedly dependent on water management and diversion effects. That could have a key impact on these populations that you're talking about.

Primary productivity, the nutrients turning into a (inaudible) point and blooms, the production of plankton and how that might affect these populations. I don't see that in here at all.

MR. CHADWICK: Yeah, that --

MR. IZMIRIAN: To what extent is that going to be considered in this analysis?

MR. CHADWICK: Okay. If you go back -- if you go -- if you look at the individual matrices, that is included in the detailed analysis for each species. And each of the teams did the best they could in judging how that would be affected by just flows and that kind of thing as well as by the

common programs.

And, for example, the Delta smelt team felt that the primary value of the common programs from the Delta smelt standpoint was not their physical utilization of the habitat that would be created by the shallow-water habitat in the marshland, and so on like that, but the indirect effect of creating increased productivity, both the primary and secondary, and the benefits of that.

So they -- the benefits that they attributed to the common programs they reached the conclusion were due to these indirect effects on food supply, not the direct effects of the smelt utilizing that habitat because they felt that smelt would not utilize that habitat directly themselves to any significant degree.

So it is in there. It's a couple of levels down and kind of not obvious but that was considered by each of the teams.

CHAIRMAN McPEAK: Martha?

MS. DAVIS: First I'd like to agree with Alex that this is an impressive amount of work. I want to thank the team for all the time and energy they've put into this.

I have two questions at this point: One

is, in the modeling, were the requirements of the CVPIA included?

MR. CHADWICK: Yes. Let's see, there's -- there are some qualifications to that. There's some pieces of the CVPIA program that they're -- they're still working on how to incorporate in the models but -- so that not all of the changes are reflected in the models so there's some difficulty there.

But the principle is that they are to be included to the extent that those have been agreed to and are being implemented and it's -- it is expected to be part of the baseline.

MS. DAVIS: So (inaudible) requirements?

MR. CHADWICK: Let's see, Mark isn't here, is he?

Yeah. I don't remember the answer to that analysis, Martha. We can get that for you. The modelers I guess are not here today.

MS. DAVIS: Okay.

The other question I had is I noticed in the written report that as this information was being put together, there was also some effort to assess the level of uncertainty coming up --

MR. CHADWICK: Yeah.

MS. DAVIS: -- with these numbers.

How did -- how did -- did you in preparing this presentation, did you take the -- how did you integrate the level of uncertainty that is reflected in the numbers in the report itself?

MR. CHADWICK: Okay. This does not integrate in uncertainty. These -- these are just the point estimates that were made. In the report there is uncertainty. I frankly feel that it's not a very satisfactory treatment of that subject. There is a lot of uncertainty with each of these alternatives and with the common programs.

I participate in the salmon team so I can more easily -- most easily describe what the salmon team did. The salmon team basically felt that existing conditions, we know basically what's there. And we don't know a lot of the whys. So for the uncertainty value the salmon team were describing were the uncertainty associated with what the probable consequences are, not the whys of, which is another different nature of uncertainty.

The common programs, there are quite significant uncertainties about not only how the programs will be implemented but what -- you know, what would be done in those programs but there are

real uncertainties about the consequences of increasing shallow-water habitat. How much does it benefit salmon, there's just not a lot of guide on that. So there's an increment of uncertainty there.

And then any of the alternatives that involve substantially changing the Delta, i.e., Alternatives 2 and 3, there's another big increment of uncertainty. And the uncertainty numbers reflected that. The striped bass and salmon -- the striped bass and Delta smelt teams largely said any of these changes are just really highly uncertain for all of the alternatives in the common programs and most everything they assigned the highest level of uncertainty to.

It's clearly an issue. There's -- you know, that doing nothing is certain to be unsatisfactory, I think we can all agree. But when it comes to how confident can we be of levels of benefit, there's -- from these big changes there's a lot of uncertainty biologically. There's just no question about it.

CHAIRMAN McPEAK: Okay. Thank you.

Ryan.

{?}RYAN: Ever so briefly, Pete and Ron thanks for a presentation that has evolved over the

last three or four weeks and I think raised a lot of interesting issues and questions.

But Pietro's question related to the endangered species biological opinions on the main stem of Sacramento and the recovery issue, there was kind of an -- in developing this matrix and understanding this fish team did start in February, it was kind of a dual-fold approach in terms of establishing isolation as it related to -- and not isolation in terms of conveyance, but the isolation of the Delta as a complex, its limiting factor or its optimization opportunities as related to different species, recognizing that only a portion of the life stage other than Delta smelt occurs in -- occurs in the Delta.

So as we looked at -- at federal and state -- potential federal listed species and potential State listed species, there had to be a combination and have a demarcation between what activities are you doing in the upper watersheds or in the main stems or the tribs to the main stems that are critical as natal streams for rearing. And then that component had to almost stand alone in part with the exception of as it relates to the alternatives, the three alternatives that make

structural changes in the Delta.

But, obviously, how well they do in the -- in the tribs, the actions are being taken care of in the main stem of the tribs, the natal areas, then it became an issue of what -- what that contributes plus what the Delta changes contribute to the recovery of the species.

So that was kind of the approach that was teased together as kind of incremental.

If we were to just -- as Pete properly characterize, just rely on Delta improvements, with the exception of Delta smelt issues, we could not expect to make the recovery (inaudible). But there needed to be a clean -- a clean demarcation.

I think the last point is that the issue of uncertainty leads you to the issue of "Well, how do we then make the decision?" And I think we're going to have a series of relative ranges and a series of hypotheses and, you know, Dick Daniels discussed yesterday the indicators and a variety of ways we're going to manage to integrate the CMARP and IAP activities. And essentially, at some point, you know, this group is going to have to say, "We believe that we want to test this hypothesis that we're comfortable that this arrangement deserves

an opportunity for implementation and yes, there's a significant investment in that."

And then you're going to have to use your adaptive management theory and application to see if in fact the first seven years or the full 30 years of this project established the benefits on all the fronts of this mission, you know, that -- that we -- that we want to attain.

So I guess what I'm saying, this is not -- you're not going to get, from my perspective -- and Ron and Pete, tell me if I'm wrong immediately -- an issue where you're going to get a series of gauges as it relates to the benefits to species that are absolutes. There are so many dynamics involved there that you've all been exposed to now, that you're going to get a probability. And from that probability you're going to have to make a decision that it's an investment worth making.

CHAIRMAN McPEAK: Okay.

MR. CHADWICK: And this has been pointed out over the first seven years or so, some number of years we're going to be living with the existing system and incorporating changes. The physical changes, no matter what you want, just can't occur instantaneously.

CHAIRMAN McPEAK: Thank you very much for your presentations, Ron and Pete, and Ryan, your comments. I think we realize that this, too, is a very complex and critical, vital issue to the whole work of CalFed and BDAC and we apologize for the limited time, but this is a very good start into, I think, a new level of substance and detail.

You will have observed that we now have our Chairman, and I am delighted. So I'm prepared to turn this over to him. Just let you know that Mike yesterday was very engaged in opening up a new housing project subdivision that ultimately will be 4,000 units, but the first phase it went very successful. So providing homes, affordable homes for people in California, is a very laudable endeavor and we understand what you were doing.

MR. HILDEBRAND: Was it on prime ag land?

(Laughter.)

CHAIRMAN McPEAK: It was not on prime ag land. There is water for it. I'm sure there is efficient water conservation, outdoor irrigation of water, there better be. All those things I'm sure it's a model for.

Mr. Madigan.

CHAIRMAN MADIGAN: Let's see, do I have to defend myself here?

I delayed this project a year to renegotiate the boundaries with the city, the county, the state and the feds over the multiple habitat plan that they wished to implement, and we did that. Yes, we are currently in negotiations for a reclaimed water line that will run right through the project.

We sold the least expensive houses in the City of San Diego to a group that looks like the United Nations of young, enthusiastic, excited people buying their first home. It was -- it was neat to see and neat to be a part of, and I'm glad to be here today because yesterday was actually fun.

(Laughter).

CHAIRMAN MADIGAN: And that doesn't happen too often.

MS. McPEAK: That makes one of you.

CHAIRMAN MADIGAN: That's right. Yeah, it sounds like you guys had a real good time.

Where are we?

MS. McPEAK: We're here on a -- we -- I don't think we have Mr. Cahill here yet.

Is that true or is it out --

CHAIRMAN MADIGAN: I haven't seen him.

MS. McPEAK: Okay. Then we'll proceed with our panel, and Ann actually is going to be our moderator and I think handle it all.

CHAIRMAN MADIGAN: Thank you, Ann, lead us on.

MS. NOTTOFF: I'm going to have the first set of speakers join us at the table here. They're going to -- the first set is going to talk about fisheries and communities and economic impacts here in the Bay.

I -- we've asked -- we've pulled together a set of speakers today to give the members of BDAC who are from all over the state, a clear understanding of the economic interests here in the Bay and coastal areas that depend on a healthy Bay-Delta ecosystem and freshwater flows as well as a primer on why in fact what happens on Butte Creek or in San Joaquin County really does make a big difference here in the San Francisco Bay.

In pulling together this panel today I do want to thank members of the Environmental Water Caucus and others who have worked on this and identified I think some people that I think you'll really find informative this morning.

You'll note that I am not Tom Graff as some of the agenda items say that Tom was going to do this. He graciously volunteered to cover this if I -- I've been out of the loop for the last couple of weeks with a family emergency, but yesterday afternoon's BDAC session was so energizing I thought, Okay, I can stand up there today and introduce this panel. So it wasn't that bad, Mike.

We've also -- the first panel you're going to see today is -- they're going to talk about fisheries and economic interests here in the Bay. And I think since we're running behind time, we'll ask people to be as succinct as possible. I think people will be talking from three to five minutes and Roberta is going to be our timekeeper.

We had originally thought that we might take questions in between the panels. Let's see how we're doing on time and see if that makes sense.

CHAIRMAN MADIGAN: All right.

MS. NOTTOFF: If it's a problem, then we can just keep questions until the end.

CHAIRMAN MADIGAN: Okay.

MS. NOTTOFF: So why don't I just introduce -- if the people will self-introduce themselves and here we go.

Thanks.

CHAIRMAN MADIGAN: Thank you very much, Ann.

Good morning. Welcome.

MS. HOLLAND: Thank you. I don't know, this is on?

CHAIRMAN MADIGAN: This is on.

MS. HOLLAND: Good morning. My name is Elise Holland, I'm a biologist with the Bay Institute and as Annie said, I will keep my comments very brief.

I want to -- I want to cover three specific topics today and I'll do them as quickly as I can.

The first is I want to discuss this issue of uncertainty with you.

The second is I want to give sort of my view of the diversion effects team effort as a member of that group.

And the third is I want to talk a little bit about baseline issues and where CalFed I think should be going from here from a modeling and opportunities perspective.

CHAIRMAN MADIGAN: We are not so short on time that you should not tell us those things we need to know.

MS. HOLLAND: Okay. Thank you.

Okay. This issue of uncertainty, I want to bring this up because I think it's something that we all need to, if possible, increase our level of comfort with. And by that I mean, one of the primary principles or tools that CalFed is going to attempt to use as it goes through the short and long-term solution process, is this concept or this tool of adaptive management, and Ryan raised this and I'm glad that he did.

Inherent in adaptive management is this issue of uncertainty. And by that I mean adaptive management allows us to decide to take an action based on a hypothesis that we've crafted and -- with the understanding that we may or may not get the result that we expect to get, and then constantly reassessing our objectives or our hypotheses and our actions to refine or improve those actions so we can get to the ultimate goal.

And I think this is important to raise because I -- I have a feeling that some members of the CalFed policy group or other members of this process are looking for an answer and I -- one answer on how we're going to solve the problems in the Delta, and there is no one answer. And I just

want to say that for the record. There are a lot of answers and there are going to be a lot more questions than we have today as we go through this solution -- this implementation of the solution process.

So I just -- I just want to put that out there. And that also relates to the second topic I want to cover, and that is the diversion effects team effort. I -- I think you got a lot of information this morning and it probably was a lot to digest, but I hope that you read the report or at least the summary of the report and look at the matrices if you haven't already. I'm sure a lot of you have.

Inherent in those matrices are also a lot of uncertainty and a lot of assumptions. We made a lot of assumptions going in because of a couple of things.

One -- oh-oh.

CHAIRMAN MADIGAN: Don't take this personally.

Okay, guys in the back, those are the light switches. All right.

MS. NOTTOFF: One issue is the fact that we were given very limited time to do this analysis

and so we had to do the best we could with the data in hand, and we didn't really have an opportunity to go out and collect new data or crunch new numbers. And so we had to use professional judgment, and -- and Pete pointed that out.

But again, I want to highlight that here. So -- so take that into consideration when you read the report. I think that -- that what you'll see there is that there are a lot of pluses and minuses or trade-offs that occur when you start looking at the different alternatives of -- in terms of how they may benefit or impact the species of concern.

And I want to just highlight for you some of the things -- some of the gaps that -- that Pete identified, but again I want to highlight so you can consider as you read the report.

The first is this issue of species breadth. We focused on three groups of species, salmon, striped bass and Delta smelt, representative of different life-history strategies. Salmon as a species that moves through the Delta on its upstream and downstream migration paths and so has limited exposure to Delta conditions compared to the other two groups of species; striped bass which spend most of their life cycle in the estuary, and Delta smelt

who unfortunately live in the estuary and so they get the hardest hit.

So there are a lot of other species out there that we care about, (inaudible) species and other anadromous species, and those are not -- those were not dealt with specifically. We just assumed that we were covering their life-history strategies. So we might want to -- we might want to consider looking at those in more detail, like steelhead and split-tail.

Second is this concept of modeling. We used one modeling run to do this analysis. And that was CalFed's base case modeling run which includes existing biological opinions but not necessarily everything in a recovery plan because you can't really model that, but existing biological opinions for winter run and Delta smelt. But also only the upstream actions that were part of the CVPIA B2 decision that came down last November and not the in-Delta actions which are now part of policy.

And thirdly, the base case reflects a 2020 level of demand and not 1995 level of demand. So whether or not that matters in our analysis I'm not entirely sure, but I think we need to construct a new base case to get a more realistic picture of

what we -- what the system looks like today and what we can do to improve conditions today.

I already touched on the time line. Again, it was a very short time line. I want you to know I think the report is credible but understand that we were under duress.

For the common programs and the effects of the common programs, we focused on two specific aspects of the common programs:

One is in-Delta screening of those ag diversions of which there are many, some 1800 I believe, that still need to be screened. And the second was the creation or restoration of shallow-water habitats.

And we tried to get our heads around how we thought those benefits or impacts might play out. And with screens it's a little bit easier but we still don't know how to screen striped bass, eggs and larvae or Delta smelt young. But with the shallow-water habitat issue it's a little bit more difficult because it depends on where the habitat is, how much of it and what type is built.

In other words, if you build it in a salmon migration corridor in the western part of the Delta, yes, that would probably provide a benefit to

juvenile salmon. So you see where I'm going. We need a little bit more detail on the common programs.

The water quality issue came up numerous times. We didn't necessarily have expertise in the group to discuss kind of the synergistic or chronic effects of water quality and we -- we don't have a lot of those answers.

As Alex mentioned the exotics issue and our uncertainty there, the same applies to water quality. And the exotics issue was also dealt with kind of peripherally. There are so many species out there that we have yet to identify. We have very little understanding of how they're affecting endemic species and what their relationships are between use of habitat and other food chain interactions. We need to do a lot of work there as well.

Flows below Hood was an issue that Pete discussed and -- and there was some uncertainty there in terms of whether or not you would decrease flows enough to the point where you would lose benefits downstream by creating new shallow-water habitats to benefit salmon. So there are some trade-offs there.

And then there is also this issue of kind of sloshing back and forth of a salmon juvenile that might bypass the screen on the Sacramento River but because of tidal effects be pushed back north and be exposed to the screen multiple times. So there are uncertainties there as far as mortality or other injurious effects that might occur.

And then finally, this issue of recovery. We -- we didn't define recovery in the group. We felt unanimously that that was a policy decision and also that we were asked to look solely at the legal Delta. And it was our feeling that if you really wanted to achieve recovery of all these species, which I believe is the goal of CalFed, you had to look at the entire system, both upstream and downstream. And that's part of what we're going to do now.

But you also had to understand that we weren't going to get there in Phase 1. And that's sort of what we were looking at in the beginning of this process was, you know, what's the best choice now for Phase 1.

And I want -- I want to close by touching on this -- on this issue of where we are today versus where we think we want to go. And it gets

back to modeling which I pointed out in the beginning. The modeling that CalFed is currently using uses -- utilizes some assumptions that the environmental community, and I do not necessarily agree with, that relate to demand.

And so what I -- hopefully, what I think this group should do and will do in our -- in our next phase of work is meet the biggest challenge that CalFed has right now. And that is, figure out some way in this first phase of five, seven to ten years how not to continue to lose populations of striped bass and salmon and Delta smelt, how to get beyond the status quo of those abundance levels, how to maintain water quality, at least not let it continue to deteriorate but actually improve water quality, and how to continue to meet demand.

We've got to do all those things in the first phase before we figure out what some long-term solution is. And in order to do those things, we have to ask a lot of questions of ourselves using adaptive management, but we also have to have a better understanding of how we can optimize the existing system from an operational perspective. And that is what this group is going to attempt to do primarily.

How do you build a better Delta from a fisheries perspective while continuing to deal with those other two prongs, water quality and water demand. And that's going to take a reality check, I think, from a modeling sense. We need to get a better -- we need to have a much more clear perspective of where we are today before we try to decide where we want to go.

Thank you.

CHAIRMAN MADIGAN: Thank you.

Yeah, if there are a couple of questions now, Ann, we'll certainly take them.

Eric and then Pietro.

MR. HASSELTINE: You were kind enough to give us a written analysis here, one page that we have.

MS. HOLLAND: Uh-huh.

MR. HASSELTINE: And I think you just touched on it, what my question was, which is related to the last paragraph. But -- and I'd like you to clarify that a little bit if you can. I --

MS. HOLLAND: Okay.

MR. HASSELTINE: I mean, basically, what you're saying here is that CalFed has it backwards, which is possibly true, but I'd like to understand

that.

In other words, you're suggesting that whatever approach we're on is not the right one to really look at this issue, and I think it's a -- it obviously is an issue of very great importance and potential high impact on everything we're doing here.

MS. HOLLAND: Uh-huh.

MR. HASSELTINE: So we want to get it right. So could you just clarify for me why you think the way that we're currently looking at this is not right?

MS. HOLLAND: What I -- there is the one page of this outside in the hallway if anyone wants a copy.

And I do say in here that CalFed currently has it backwards. And what I -- sorry, Lester -- and what I mean by that is we need to -- we need to be doing our initial work by reflecting today's reality. And that means building a base case that reflects 1995 level demand and all existing policies from AFRP B2 actions, to biological opinions, to water quality control plan standards, including VAMP, et cetera, et cetera. All those things that are current tools should be in the base case.

And then we should be able to say, "Okay, given these tools and given what we know existing demand is, how do we continue to meet that demand while making the system more fish friendly?"

I believe there are ways to do that, whether it's using different EI ratios, whether it's shifting, timing or magnitude of pumping from one time of year to another, in addition to using other tools, like additional groundwater storage, transfers, conservation and efficiency measures.

Let's try to maximize our efforts there and then start saying, "Okay. Five years down the road from now, after we get some preliminary answers to our questions about doing these new optimization approaches, where are we, and where is the demand level, and what is the more realistic expectation of where we really need to be in 10, 20, 30, 40 years from now?"

So let's -- let's check the truth now and then that will help us, I think, be more effective later on.

That's what I meant by that.

MR. HASSELTINE: Thank you.

CHAIRMAN MADIGAN: Pietro, then Byron.

MR. PARRAVANO: Thank you, Michael.

Elise, thank you for the report and also thank you for offering to serve on the fish team.

I -- there's one comment that I have when you mentioned that on the team there is differing -- differing views of the modeling about exactly what points of the -- to really be putting into the model. And you said that you wanted -- the short-term objective is to look at trying to keep the Delta Bay and Delta status quo for at least the next six, seven years without -- without further destroying the habi -- or the water flows and the habitat, and then meanwhile to look at the -- at the longer term picture.

And you mentioned that two -- there are two prongs, you want to do that while also considering two other issues, the water quality and water demand.

Now, in terms of the water demand --

MS. HOLLAND: Uh-huh.

MR. PARRAVANO: -- can you -- can you explain that, which -- demand from which perspective?

MS. HOLLAND: I meant that from the -- from the agricultural community.

MR. PARRAVANO: Okay. I --

MS. HOLLAND: I think we have to be realistic in that we're going to continue to deliver water to the urban sector and to the agricultural sector regardless. But there are smarter ways to do that and there are other tools that can be utilized by those communities to meet their demand currently and any existing demand that may bear out.

MR. PARRAVANO: There's something that I -- I would encourage the fish team to be looking at --

MS. HOLLAND: Okay.

MR. PARRAVANO: -- both in terms of the short-term and the long-term strategy for resolving the water demand is that you have to include water demand for the fisheries.

MS. HOLLAND: Uh-huh.

MR. PARRAVANO: If the fisheries are going to be feeding people with this -- the society that's going to have an increased population in the next 20 to 30 years, there has to be an increased water supply for the fisheries.

MS. HOLLAND: I agree.

MR. PARRAVANO: And something -- a point I made yesterday in terms of just showing the equity of fisheries and agriculture and urban water

districts, that if the population is going to increase and is going to put that much more demand on the water supply, the fisheries cannot suffer because of that.

So that's -- I would encourage -- I was --

MS. HOLLAND: I agree with you --

MR. PARRAVANO: Yeah.

MS. HOLLAND: -- and that's what I meant. I mean, Mike Spear (phonetic) put it pretty emphatically in the policy group the other day when he said, "We need to get to purple, we need to get the sixes and the sevens" -- referring to the Barney joke -- "sooner rather than later, and you're not going to get to purple if you continue to go towards yellow."

So what I'm saying is incremental benefits have to occur every step of the way. And we need to figure out how to restore some equity to the system, yes, but we need to be more creative about how -- how we're doing that because we're not -- we're not fully utilizing our creative talents right now.

So I agree with you, Pietro.

CHAIRMAN MADIGAN: Okay, thank you. Byron, and then we're going to get on with it.

MR. BUCK: Thanks, Mike.

Elise, I appreciate your remarks, particularly on the uncertainty issue and the adaptive management issue, I couldn't agree with you more. There's lots of questions and lots of answers and we don't necessarily have them all integrated.

Also, I think it would be useful to do a run with the existing baseline to know where we are today and what we might -- how the different configurations would change the today condition. But that's not necessary with the no-action condition because demands will continue to increase and grow and we've got a system out there that essentially will try to meet those demands within the limitations of physical infrastructure and water rights.

So --

MS. HOLLAND: Right.

MR. BUCK: -- we can't be thinking that just because we had -- have 1995 demands, that existing policy will keep those where they are. They will change based upon the nature of the growth --

MS. HOLLAND: Uh-huh.

MR. BUCK: -- in demands and the system will do its best to accommodate them within the

limits of current standards and current physical facilities.

So that truly a no-action alternative, we will see increased demands on the system at certain times, and so we need both analyses to look at where we're going if we do nothing and what could we do today if we could hold it static.

MS. HOLLAND: I agree with you, Byron, but I want to make sure we have that other bookend.

MR. BUCK: Yeah.

CHAIRMAN MADIGAN: Okay. Thank you. Ann?

Good morning.

MR. BOITLER: Good morning. Is this mike on?

CHAIRMAN MADIGAN: You are.

MR. BOITLER: My name is John Boitler (phonetic) and I am here today representing the Fishery Foundation of California to talk to you about the economics of recreational angling or as it's commonly called sportfishing.

No one knows exactly what economic contribution recreational angling makes to the state's economy today because such estimates are not made on an annual basis of this economic activity.

Generally speaking, the best source of information that we have regarding the contribution is an estimate provided once every five years by the U.S. Fish and Wildlife Service. The report they publish is called "The National Survey of Fishing, Hunting and Wildlife Associated Recreation."

Their 1996 report estimated that the 37 million angler days adults spent sportfishing generated some $3.7 billion in direct expenditures and a total economic contribution of $7 billion to the state's economy. California ranked No. 1 of all the states in the nation in money generated and in the number of days anglers fished.

As impressive as these numbers may sound, this activity was made by a depressed sportfishing industry which has suffered from the effects of declining fisheries, especially in Northern California where many of the prized fish have been listed under state and federal Endangered Species Acts.

Angling success directly affects the amount of future fishing effort and the dollars expended in the marketplace. Nowhere is this more evident than in our own backyard. Declines in the estuary's main fisheries, striped bass, salmon, steelhead, American

shad and sturgeon, have resulted in several billion dollars of economic activity not being generated over the past 30 years.

The most comprehensive economic report on this subject was done for the California Department of Fish and Game in a report they entitled "Anadromous Fisheries Report 85-03," which they published and released about a decade ago.

The report found that due to the extensive and prolonged declines of the estuary's fisheries, recreational angling activity had also dramatically declined along with commercial fishing benefits to the economic sector. As these declines began to affect fishing success, angling effort also declined, slowly at first, but over the decades this resulted in hundreds of millions of dollars on an annual basis not being generated.

And that effect was that many anglers stopped spending money on trying to catch fish that weren't there. Something like going to Safeway and not finding milk and saying, "Guess I'm not going to spend money on milk." As a result, some of the sportfishing businesses that depend upon anglers fishing for those species also declined.

The striped bass fishery may well provide

us the best example of how demand for a fishery can decline as fishing success rates fall. Thirty years ago this fishery was called the premier fishery of the estuary. Today it has declined nearly 80 percent and, as you may well know, its population is not self-sustaining.

Instead of nearly three-quarters of a million anglers that fished for striped bass 30 years ago, we find some 300,000 anglers participating today. To varying degrees, the result has been similar for steelheads, shad, sturgeon and salmon fishing.

Another analogy which I hope you'll find informative can be found in the data on the number of angling days spent fishing annually. In 1989, anglers spent 58 million angler days fishing in the state. In 1996, that number was reduced to 37 million angler days, representing a decline of 21 million user days. This kind of participation decline has had a significant and unmitigated economic impact on the sportfishing industry.

Since for the most part anglers do not fish for economic motives, these fishery declines must also be discussed in other terms. Most of those that I know that fish, do so because they greatly

enjoy fishing and the catching process. When they cannot catch fish, it's rather like trying to go -- it's like trying to go swimming without water, a less than satisfying experience.

They love the sport as well as the resource and the environment that makes it possible. Whether on the ocean, the Bay, the Delta or on a river, these folks -- for these folks fishing helps to make living and working worthwhile. Simply put, fishery declines represent a loss in their quality of life. They cannot simply change their preferences and find another sport. This love of fishing is something in their very nature.

Since we all -- well, since as a form of science and government we have the knowledge and technology to manage our fisheries on a sustainable basis, this would encourage recreational activity and of course be good for our economic well-being. It's truly unfortunate that these renewable public resources have been allowed to decline.

In addition to the issues it raises about the quality of life, these declines represent at best an inequitable public policy that prevents citizens from exercising the right to fish in the waters of the state as guaranteed by the state's

constitution. It erodes the faith that anglers have in allowing the state and government to be the trustee of public resources while substantially impacting the state's economy.

That basically concludes what I have to say to you about the economic losses and the impacts on recreational angling. I wish there was more data readily available but I think I would like to take questions if you have any and answer them.

CHAIRMAN MADIGAN: Thank you, sir. We're going to go ahead and hold the questions. I probably should be a little more mindful of the time here, but we will have time for questions at the end as well as public comment.

Good morning.

MS. BECKETT: Good morning, my name is Peggy Beckett. My husband and I have a charter boat fishing operation in Half Moon Bay, and for those of you from other parts of the state, Half Moon Bay lies about 30 miles south the coast from San Francisco.

By way of introduction of myself to you, I've been in the sportfishing and have done some limited commercial fishing since 1974. My husband who's my partner in my life and in my business, has

been fishing all his life since he's been 17 years old in just about everything you can catch off the California coast just about everyplace.

So we -- we come with some experience, some -- you know, one of us more than others. I participate locally in watershed restoration work on a countywide basis on a Fish and Wildlife Advisory Committee. At a state level, I've just recently joined the Salmon Advisory Committee as a sportfishing representative alternate. And federally, I hold an appointment at an at-large fishery seat on the Habitat Steering Group for the Pacific Fisheries Management Council.

But the reason I'm here today mostly is to talk about how the water and the things in the Bay affect what happens with my business.

I can't stress enough, and all of you from what I've heard this morning know as well as everyone else, all of us that use it in different ways, how important the clean water and the adequate water flows and reliable water flows are to all of us in the Bay and in the Delta.

The Bay's nursery area, it's the nursery area for the anchovies and the herring, those are the forage fish that our salmon and our striped bass

and our halibut and our rock fish all eat. These forage fish are our link in the food chain, which the game fish that my clients catch depend on. These fish need the wetlands as well for their nursery areas.

The people who come to fish on our boats, they come from all over. We carry a lot of local clientele but we carry people that come from all over the world. They come to have an experience, maybe it'll be the only time they ever get to go and do that. We -- we try to function as an educational place as well as providing recreation for them. And they stay in our restaurants -- they stay in our hotels, they eat in our restaurants, they buy souvenirs. They provide a lot of local economy.

In the business that I have, which is a -- is a landing business, I book and represent seven charter boats. They go from 28 feet in length to 65 feet in length and they carry anywhere from 6 to 48 people. We probably carry between 15 and 20,000 people a year, and I'm one of two major landing operations in my harbor.

What happens with the water has a real direct impact on everything that happens with all of our livelihoods. And as a member of Golden Gate

Fishermen's Association, I realize how many more boats it impacts. They represent boats that go from Fort Bragg to Monterey Bay and we all catch the same species of fish and all the -- I've lost my train of thought here.

I would encourage you folks to adopt an alternative that will provide adequate and reliable and clean water through the Bay and Delta that's going to ensure the complete life cycle of the fish that depend on the water.

I know that my business needs it. We need it to help prevent the devastation of our coastal economies. We need to know how much water we need for these fish. What -- what do we need to sustain these fish populations. And it is a renewable resource but it will depend on all the decisions that all of you make to make it happen.

One other piece that I want to add that I heard Pietro mention earlier is about increase in people and increase in the need for fish. We hear about the increased needs of all the other users in the state for water because populations are going to increase.

Well, the populations of the people that want to use the resource will increase, too. And

the populations of the people that are going to want to eat the fish that the commercial fishermen are going to increase, too.

And so -- so it goes further than just what I might need for my business to make it happen for me but for all the people of the state.

Thank you.

MS. NOTTOFF: Yes, let's go on.

Mr. Carpenter.

MR. CARPENTER: Earl Carpenter.

MS. NOTTOFF: Yes.

MR. CARPENTER: Yes. Ann, I thank you for a chance to get acquainted today.

I am a commercial fisherman, have been all my life and my dad was too. In fact, he was an old gill netter, gill netted in the rivers before they were closed. And he was a unique person. He was -- always told us kids when we went fishing that, "Hey, it isn't out there. It's in the river," that's where the action was. We didn't pay much attention.

But to make a long story short, and I'm not going to get long-winded about it, I have thoroughly being a fisherman all my life and I intend -- I allowed my boys to take that time, too. But, you know, what I'm doing now is working long enough to

get my grandkids through college because there really isn't too much future.

And it isn't because California hasn't done a fair job on the salmon. Considering what you -- what the dangers are, they have done I think well. And I'm judging that because I happen to have spent, I don't know how many years it was, five, six, seven years as chairman of the State Salmon Advisory Board. And I stepped down from that when we printed the restoring the ballots. That was our final thing, and it had -- I hoped that we had conveyed the idea with that of what is possible in getting -- saving our agricultural industry and the fishing industry, too.

More and more in my lifetime as we met with the farmers, we had very good luck in talking pretty good sense to them. They're -- they're the same type of people we are. Nat Bingham was doing great work up with the different people. I'm just sick about losing him because he was our point man we shoved out there to talk to them.

And -- for instance, it's like with Salmon Committee which I also hold a seat on, we used to go down and meet in Merced at this little tiny hatchery that the Merced Irrigation District had. And we

laughed when they seen these -- there were two ladies and a man, they were operating this little thing, and quite frankly, they'd get those big old salmon and they'd just club the heck out of them, you know.

So the first thing we bought them was a hydraulic lift that looked like something that was on the back of our boat to pick our crab tanks out for them people to get their fish up in and take the eggs out of them and hatch them.

In later years, we also bought them some hatch boxes they used in the hatchery and they put -- they put some bigger pins in.

And the irrigation district has done a fair job there. And I'd like to say that because, you know, there's -- there's -- you're going to have to have a program come up that everybody's going to have to live with. And there are people in the agricultural industry that more and more are aware of what the problems are and, sure, they want their water and stuff.

But there's places in California where those old irrigation dams are so old, the best thing you can do is build a new one and blow them out of there because they're just a waste of water.

They're just -- when they use them and then they run off and they're running the rest of the year out there and nothing, there's no -- don't need them. With better systems, well, they'd probably use less water.

And the main thing, we got to have the water reach the river for our salmon to come that step. And that's what -- up in Butte Creek what we've worked out with the irrigation people. There's a place, by the way, that still has spring run fish, those huge, big fish that we've eliminated in the San Joaquin system.

Of course, they will never be because genetically you can't replace them. They were the big fish that would have to jump over a force falls and then they stayed up the river for a long time because the water is too cold and it takes them longer to hatch. And so they're actually getting them down, almost got a five-year-old fish, that's why they're so big.

But we still have those in -- in the northern part. That's where Nat Bingham was working and, God bless him, and maybe he's made -- he's made progress on it.

And that's about all I have to say. I do

appreciate what you people are doing and I'm not -- I'm a little fearful of how it's going to come out because it seems like we have had so many losses up and down the coast. But all in all, California even with all the shutdowns we have now and going through an El Nino now, has -- there's a lot of rivers that have shown a pretty good sign that we're doing the right thing.

And that's all I have to say.

CHAIRMAN MADIGAN: Thank you, sir. You remind us that this isn't all just old dry old science. Thank you.

Good morning.

MR. GREGG: Thank you, Mr. Chairman.

My name is Zeke Grader (phonetic), I'm Executive Director for Pacific Coast Federation of Fishermen's Association and on your agenda I'm filling in Pietro's slot. I was not supposed to have been here because of jury duty, but I'm happy to say a verdict was rendered and justice was served.

(Laughter.)

MR. GRADER: So I'm here.

There are just five short points that I want to make in all of this.

First of all, one of the outstanding concerns we have, particularly after listening to the report earlier this morning by Pete Chadwick, is the fact that we have this DEF team now put together, this Delta -- whatever it stands for -- team. And the thing that concerns me is that while it did mention that stakeholders are involved, I should say that there is one stakeholder that is notoriously absent on that. And that is the fact that there is nobody on this team from either the commercial or recreational fisheries. And that's a pretty egregious situation.

We have the diverters are represented but nobody there to represent the interests of the fish or those who depend upon them. And I would hope that that, No. 1, would be corrected fairly soon. And it's not that we did not submit names of qualified biologists to be on the team. It's just simply that those recommendations were never acted upon.

Second, as far as the economic impacts, you've heard from some of the people here today and obviously you heard from people in Fresno ad nauseam about the impacts -- potential impacts that people think may happen to them as a result of what's

happened -- what may -- the impacts might be from any of these alternatives.

Most of those are talking speculatively. I'd like to have you -- invite you to take a look at where the economic impacts have already been felt, and have been felt now over the course of 20 years, even 40 years.

One is you can go up -- just go up to places like Fort Bragg which was up till 15 years ago the No. 1 salmon port on the Pacific coast, California, Oregon and Washington. It's now a virtual ghost town.

Go to Eureka and look at that place in the summer. It used to be a bustle with fishing boats. It's nearly a ghost town. The salmon fleet is gone. Take a look at what's happened to the seasons, the six-month seasons. They're no longer there. They're little pockets of time.

The economic impacts in the fishing industry are not speculatively. They're already there, and they've been severe and horrendous. So I'd hope that that be considered in all -- all of this.

The actions, there have been people talking and you heard Mr. Chadwick talk about, "Well, we

have to look more at -- at ocean management." I would submit that we've been managing the ocean fisheries for 40 years or more.

When the San Joaquin River, after Fryant Dam (phonetic) was put in and the spring-run salmon that were lost, made extinct by the operation of Fryant Dam, no changes were made in dam operations but the fishery was outlawed in the Bay and Delta, an historic fishing that existed for a hundred years.

Now what we're looking at, we've seen the Federal Government managing the fishery basically since 1977. There's been a lot done to restrict fishery. Every year more and more restrictions go in, but almost nothing has been done to correct the problems inland.

Now, some of these obviously are not water-related, some of them quite clearly are timber-related when we were talking about Koho salmon on the north coast, Oregon and Washington. But nevertheless, none of the actions in the river, very little has been done there.

Now, people talk about, "Well, we've got to get some more controls over the fishery." Let me just point out that last year the spawning

escapement goal, that is, the goal we have to maintain optimum populations of salmon in California, were not met, they were tripled. That is, we had three times more fish back up the river than was needed for optimum spawning escapement. Not minimum, optimum. That's not a problem with fishing effort out in the ocean.

So when people talk to you, "Well, we've got to get handles over the fishing populations," we've been doing that. What we have not had a handle over, however, are all the other activities that have been affecting the fish. And sadly, I think within the three alternatives that are presented here, all we're doing still is nibbling around the edges. Nibbling around the edges.

This gets me into the third point about assurances. We've heard from urban users that they want to have guarantees, assurances that they're going to have water no matter what. We've heard from ag that we want to have assurances no matter what. And, of course, all of those are projecting also not just for their existing uses but some growth with that.

Well, we'd like to have some assurances for the fish, too. In years of good water supply in

California, in wet years, we produce fish. 1988 California produced 14 million pounds of Chinook salmon in the commercial harvest alone. That made California the biggest producer of Chinook salmon in the United States, more than in Alaska, of Chinook salmon. This is the finest salmon in the world.

We can do it when we have the water. We cannot, however, do it when we don't have the water.

And we saw other examples, too. In 1991 as a result when we first -- when we really began feeling the impacts of the drought on the salmon, production went to 1.5 million pounds. We need to have assurances of water for those fish during dry and critically dry years. We need to have the same assurances everybody else does.

I should also point out that in state law, it's state policy to double our salmon populations. It wasn't CVPIA, this is California, a law signed by Governor Deukmejian in '88 to double those populations. That should mean that not only should we be getting the water that's now needed for those fish, but also an additional increment for the doubling.

So those are some of the assurances that should be taken into consideration out there before

we start planning for additional growth. Let's take care of existing needs, and I would submit a number of existing needs are not yet being met. And I think we need to take a look at is there water for those needs.

Now, we saw on the board the matrix here of the no-action versus the three alternatives. I think it's sort of misleading because no action assumes that nothing is taking place. In fact, actions are taking place. Actions are taking place now under the Endangered Species Act.

What was good for the winter-run salmon is sure as hell going to help us with fall-run by providing cold water from Shasta Dam by lifting the gates at Red Bluff, by perhaps restricting some of the pumping when not only the winter-run are trying to get to sea but also the fall-run salmon, which are the mainstay now of not just California's ocean fishery but Oregon's and Washington's as well, those Central Valley Chinook salmon.

So there is action taking place, so don't be deluded by thinking that there's nothing happening. It's just the action may not be happening directly through CalFed. However, I should say that CalFed is helping.

CalFed can do more to help obviously, too, in removing some of the structures, as Earl mentioned, in Butte Creek and some of those other places so we can began expanding from five percent of our historic habitat which is left in the Central Valley, which does precious little to try and -- when you're trying -- particularly trying to produce natural-run salmon, and begin starting to increase that so we can open up places like Butte Creek and Battle Creek.

And this gets me to my fourth and -- and last -- or fifth issue, and that is the San Joaquin. Now, we've heard a lot of talk about we need to put in some sort of canal or structure around the Delta to help San Joaquin salmon. Well, again we're nibbling at the edges.

If we're going to do something for San Joaquin salmon, then you're going to have to provide for releases out of Fryant Dam. No ifs, ands or buts. You've got to re-water that river if you're going to have salmon in the San Joaquin. And to talk about putting canals around or trying to take care of reverse flows, again that's nibbling at the edges. The first and most basic thing you've got to do for San Joaquin salmon is have water in

the river.

Thank you.

CHAIRMAN MADIGAN: Thank you, sir.

Ann?

MS. NOTTOFF: Yeah. I think that since we're behind, although I think it's very important finally this morning fish are having their due, which is a very significant thing. But we have our -- we're running the situation where we have a couple of people, panelists, who were prepared to talk this morning who are going to have to leave soon. So I wondered if I could take some people out of order and ask this panel to -- let's hold our questions for this panel and bring in some -- the next speakers.

I also noticed that Mike Cahill is here so I don't know if you're ready to take him.

CHAIRMAN MADIGAN: Yeah, I -- I think that's fine. I think we should get the next panel organized but I would like to ask Mike Cahill to come up to the microphone. Mike came over here this morning and has some comments on funding strategies that I think are important for us to hear.

Mike, thanks a lot for coming this morning.

Thank you all very much. We will be back

to questions.

Good morning.

MR. CAHILL: Good morning.

Let me just give a little background on the funding issue. I mean a lot of this goes back to the Governor's water strategy in 1992 where he laid out ten points under the realization as far as dealing with California's water problem, no one solution is going to work, that we need to be working on multiple front here.

And then now as we're moving towards decisions along these areas, we're also looking at the funding situation as we similarly have to be moving cooperatively on how we're going to be implementing these decisions. We really need a partnership on the funding side as well between the water users, the state and federal agency.

And similarly, as we go into funding we have to -- as we make decisions, we have to be recognizing that funding will have to move in tandem on ecosystem issues and water quality, water supply and water assurances for all sectors.

The other aspect on the funding picture is really the timing. We have a lot a decisions that are going to be made shortly, remarkably shortly

given the normal decision process in the water world.

We certainly have CalFed as the centerpiece. We also have the Colorado River 4.4 Plan which Michael assures us is going to be made soon. We have beginning work on the Central Valley review of the flood management systems there and we have regional decisions such as the Owens Lake agreement that are going to have implications overall to the state's water picture.

From the Governor's perspective, we really need to keep the momentum going on those decisions. I mean they shouldn't be decisions that sit on the shelf for two or three years while we get the funding in place, but we need to begin the work now on some of the more detailed study items, such as environmental feasibility studies for storage such that we'll have that information ready when those decisions will be made on which storage and what storage we need for a water supply environmental purposes.

We also need to keep the momentum going as we make the decision through the CalFed process both on the Phase 1 implementation as well as what we'll need as far as interim assurances on water quality,

water supply, and such that we have the money to begin work on those as those decisions are made through the CalFed process.

Now, as far as the Governor's request for federal funding, this is really part of an overall package. We already have the Proposition 204 and the federal matching funds in place for the ecosystem restoration site. You know we also have the water bond, we're -- negotiations continue on that.

That particular funding piece, the primary funding components of interest to CalFed are, first, major investments in the common facilities CalFed is looking at, the conservation and recycling, water quality, levees, also conjunctive use facilities are still under discussion in that.

Similarly, discussions on providing the fund -- the base investments on what will be needed for the Phase 1 facility, the interim assurances types of projects people have been talking about.

Really -- and similarly, under the water bond, discussions are continuing providing a chunk of funding for conservation measures will be needed as part of the 4.4 agreement for the Colorado River.

On the budget side, a big chunk is moving,

although we previously had in the bond for payment of (inaudible) funds to local flood control districts moving that into the budget, funding to carry through the actual CalFed operations, something near and dear to Lester's heart, so that we can complete the work based on the time extension that was agreed to by the Governor and Secretary Babbitt.

We have funding for the VAMP agreement as far as the State Water Resources Control Board's water rights decision. We have funding to create a water transfer exchange, along with companion legislation we're looking at facilitating short-term water transfers. And then also funding to complete the environmental and feasibility studies for surface storage, doing the studies that will be necessary for the eventual permitting decisions.

The federal letter then meshes in with this just as with Proposition 204. We're looking to continue a partnership with -- a federal match for what the state and the user groups will be required to put up for the Phase 1 facility. Specifically, we've asked for a two-year authorization of $147 million with an appropriation of $67 million this year.

As far as the status of that, fundamentally the intent of the letter was to put a marker into the process right now. We will be moving forward first on the authorization front and really focusing, as far as the appropriation on the supplemental appropriations process, it probably won't be until September.

The dollar amounts that we put in at this point are based on the current discussions between the state and federal agencies on the Phase 1 facility is really what we have already in the state process to provide the state's share of that. But the language itself has not been developed and that we intend to develop in conjunction with our discussions with the federal agencies as well as the undergoing efforts. We have another arena such as the budget numbers and the bond discussions. So I think that's coming.

Overall again, what we're looking at is this is going to be a very major effort just taking CalFed in isolation, let alone what else we have going on on water decisions in the state. This is major effort over the next 20 to 30 years.

This is going to take continuing kind of cooperative partnership efforts that the state, the

federal agencies, stakers have maintained to continue making sure we have the resources to actually act on these decisions rather than have additional studies that simply sit on the shelf.

The timing is now and the needs are going to be rather great, so it's something that we feel we need to move forward on.

CHAIRMAN MADIGAN: Thank you, Mike.

Are there questions?

Tom?

MR. GRAFF: Mike, I have a lot of questions --

CHAIRMAN MADIGAN: You get to ask two.

MR. GRAFF: -- but I know time is short so I'll try to sort of go to the heart of the matter.

Some of us raised questions about this yesterday and we had some discussion about it. I guess the most fundamental questions here among many --

MR. CAHILL: Uh-huh.

MR. GRAFF: -- are -- relate to points you raised in your remarks.

One has to do, I guess, with timing. In our view, the Governor's letter of June 28th, that I

guess was generally released on Monday, prejudges the appropriateness of a number of facilities and the methods of financing those facilities well in advance of any decision-making that's taken place in CalFed that has even been discussed in serious ways by this panel.

It purports -- the letter purports to be that the California congressional delegation is supporting this when, as far as I know, California's two senators were not informed about it until Monday and many in the congressional delegation who have substantial interest in water were not informed about it. So I guess the fundamental question there is aren't you jumping the gun.

And then on the merits, you seem to say in your remarks that the principal purposes here are feasibility studies. But the specific language in both the submitted -- what the administration submitted to the state legislature for -- for -- in the proposed trailer bill for state funding and in the Governor's letter for federal funding includes permitting and land acquisition.

MR. CAHILL: Uh-huh.

MR. GRAFF: It sounds -- it doesn't sound like feasibility studies to me and I don't

think it's intended to be.

As you probably know, land acquisition has been a major problem for CalFed. Various members of the California congressional delegation have argued strenuously against land acquisition in other contexts because it's not voluntary, yet I assume you're meaning here eminent -- use of eminent domain, which is a pretty serious matter.

So on the merits, we would question the use of federal or state funds for those purposes and particularly in light of the fact that there's no mention here of cost sharing by beneficiaries, one of the crucial substantive principles, as I understand it, that the financing effort here of CalFed and BDAC have stated is what -- what is to be expected when these facilities are built.

MR. CAHILL: I mean, I don't think, I mean, any of those points -- I mean, again to the extent of particularly the last few points, as far as the actual language on what we'll be looking for in the federal process, I mean, certainly those are all the issues that have to be addressed.

Again, from the standpoint strictly taking the federal level -- letter, when we're talking about the feasibility studies and environmental

studies that lead to permitting, clearly that's we're doing with Shasta Dam. A lot of work's already been done there, how -- what we need to continue to bring -- really bring those studies to the point where the decision on whether we should move forward with a project like that and what it will take for the actual permitting.

On the land acquisition assignment, clearly that's targeted towards the Madera Ranch conjunctive use project where there are discussions going on right now on the acquisition of that land between willing buyers and willing sellers. And really, that's looking at, is this an opportunity that the federal government should take advantage of in conjunction with users.

On the user -- user pays, user sharing, as we discussed in the context of the budget proposals was the bond proposals. I mean, clearly that's -- those are issues that will have to be incorporated.

And the whole issue on surface storage is how do you bring these projects to a point where you really can be making those decisions, when you get to the actual point of permitting and construction decisions where you really have the information to kind of lay that off -- lay that out and get to the

agreement on how those costs should be distributed as well as recovering whatever money has been put up front for the permitting phase.

So I think -- again, I mean, the issues you raise are ones that clearly are going to need to be addressed and ones that we are quite willing to address.

CHAIRMAN MADIGAN: Alex?

MR. HILDEBRAND: I'd like to point out that, as Mike has indicated, there have been a lot of efforts to have financing available when needed for various aspects of the CalFed program.

I find it a little inconsistent to make a big fuss over the Governor's allegedly jumping the gun in respect to water storage which some people don't want, whereas on the other hand we're putting up money for -- $20 million for land acquisitions that have not yet been processed through the BDAC and which are a concern to some of us because they haven't been coordinated with the flood control planning, similarly with water acquisitions.

So if we're going to get pure on this and not do anything until everything is all settled, we aren't going to have any money available when we get it settled. So I feel that it's not inappropriate

to get the money on the line, and whether it gets spent or not depends on what we decide when the time comes.

CHAIRMAN MADIGAN: Tom, did you want --

MR. GRAFF: Yeah. The -- particularly at the federal level, Alex, I don't think you would want to go back there and testify to a congressional committee that "Just give us the money here in California and we'll figure out down the line what to do with it."

The fact of the matter is Mike made mention in his -- in his opening remarks that through a comprehensive coalition consisting of most of the interests represented here, and with the Governor's leadership and the leadership of others, we managed two years ago to not only pass the state proposition but to obtain significant federal funding to assist in much of the work of our CalFed effort. That was 430 million in federal monies over three years.

The first year unfortunately, we only got 85 million out of the authorized 143, and this year, in the fiscal year that congress is now dealing with, it looks like it's going to be substantially less than that. If we now seek additional appropriations from congress for these as yet

unclear purposes, will it come at the expense of those Bay-Delta Security Act funds?

MR. CAHILL: No, I mean, clearly we're going to be limited in how much California will get total from the appropriations process. But I mean, from our perspective that should not come at the expense of what we already have for CalFed.

MR. GRAFF: More for CalFed?

MR. CAHILL: More for CalFed. We may need to re-prioritize some of the other requests that we've made of congress. But from our perspective it should not be the CalFed money.

CHAIRMAN MADIGAN: Sunne?

MS. McPEAK: I was trying to actually recall who testified specifically yesterday afternoon on that item. Certainly, there were other BDAC members, Mike, that made the point that part of evidence of good faith and I viewed this correspondence to the federal government as an indication to have the partnership --

CHAIRMAN MADIGAN: Uh-huh.

MS. McPEAK: -- between the state and the federal government furthered and memorialized in a way to move forward on a variety of fronts of the potential components of an overall solution to

CalFed.

But part of that good faith that I heard come out yesterday is the funding for existing obligations and funding for components of the CVPIA not get eroded. And I think -- it occurred to me that that was something that I know the business community could also speak out on in order to try to better ensure folks that it wasn't a switch in bait. Nobody used that term yesterday. And I was the one defending everybody acting in good faith, you know, the expectation that really we're all trying to work together.

But I mention that because that was something I picked up that I'm going to take back and try to work on. And I think a similar effort that gets expressed from the state side, including from the Governor's office --

MR. CAHILL: Uh-huh.

MS. McPEAK: -- would probably help underscore the help underscore the commitment to the previous obligations.

MR. CAHILL: Yeah, I mean, clearly, I mean we're not going to make progress if we're just switching around the pots of money. I mean, we're not exactly at the point where we're flagging down

every passing train with bullion in it. But we clearly need to be looking for all the opportunities to where we can put together financing from multiple sources if we're going to complete the work that's really being laid out now.

And it's something where we need to keep adding to and not suddenly taking something we've got in hand and now redirecting to someplace else.

MS. McPEAK: A follow-up the question -- and I invite anybody to answer -- that this just occurred to me, yesterday Patrick Wright was here, he isn't here today, but representing EPA, and Patrick also addressed this issue stating that EPA was committed to the storage studies going forward.

MR. CAHILL: Uh-huh.

MS. McPEAK: I think at the heart of a lot of this concern is are we -- as you heard from Mr. Graff, are we prejudging the outcome of CalFed. Some of us think that there should be -- the studies go forward. Others think that even the studies are premature.

MR. CAHILL: Uh-huh.

MS. McPEAK: But assuming that we are looking at trying to get information that will inform an ultimate decision with respect to storage,

even Patrick Wright from EPA said, "We think that those studies should go forward."

The question I'm going to pose to someone, because I was struck by this letter from the state to the speaker suggesting Shasta because it's a federal facility --

MR. CAHILL: Uh-huh.

MS. McPEAK: -- would there be any reason why if the federal government were interested in furthering studies, that it could be a joint effort around some other site. And we are, as you were just saying, debating right now a bond measure that has a lot of very good stuff in it for better water management --

MR. CAHILL: Uh-huh.

MS. McPEAK: -- and efficient water use, including conjunctive use. I personally think Madera Ranch has a lot of value.

I have publicly said in other meetings I don't know how to further that --

MR. CAHILL: Uh-huh.

MS. McPEAK: -- without being in the middle of a negotiation over land value, because that's what it comes down to. So I end up defaulting back to the position of just saying,

"Whoever is an interested party, go get it done because it seems like a percolation four times that we find anywhere else. It's a pretty good deal."

And we all talk about groundwater banking as a part of the water management stuff.

MR. CAHILL: Uh-huh.

MS. McPEAK: So since we're talking on the state side about a bond measure that includes conjunctive use --

MR. CAHILL: Uh-huh.

MS. McPEAK: -- there would be nothing that would prevent, I think -- this is all in the form of a question, Mr. Chair, although it doesn't sound like that.

CHAIRMAN MADIGAN: It's an interesting one.

(End of tape)

MS. McPEAK: -- there would be nothing that would prevent in theory the federal government joining as a partner and looking at these facility studies by matching what we might be doing in offstream storage that would be matching what we're looking at generally in conjunctive use without calling out a specific project.

Is that true? Does anyone want to respond

to that?

MR. CAHILL: Well, let me respond to it just quickly. I mean -- I mean, if you look at the language in the letter, we use those two simply as examples. We don't specifically say we want money for Shasta and Madera. We put those in because those are clearly two projects that are under active discussion, as well as they're the types of projects that have other benefits other than what CalFed is looking at them for directly.

As I said, we don't have language together yet. I mean, part of what we want to get a response from the congressional leadership on how feasible they thought this request was, what kind of direction, if we move on it, they'd like to see. But similarly we want to keep the language so that it does tie in with the overall discussions we are having with the federal agencies.

So if there's other options out there, there's directions the people feel that they should go, our interest is making sure we have a federal financial commitment to go on with the partnership we have with them now.

CHAIRMAN MADIGAN: Okay. Thank you very much, Mike. I surely appreciate your taking the

time to come over and join us today and brief us. Thanks a lot.

Ann, you're back.

MS. NOTTOFF: Oh, it's Barry Nelson we were going to get.

CHAIRMAN MADIGAN: Yeah.

MS. NOTTOFF: Yeah, we have -- we had three -- four more --

CHAIRMAN MADIGAN: Go ahead.

MS. NOTTOFF: -- panelists that we asked to --

MS. McPEAK: Ann, I'm -- I apologize for interrupting you, and if Mike is still out there, could you grab him because Barry Nelson also wanted to comment during this time.

I do apologize to you, Barry and Mike.

MS. NOTTOFF: Okay.

MS. McPEAK: Mr. Nelson.

MR. NELSON: Thanks, Sunne and Mike.

I will be brief. I just wanted to provide a couple of comments and two questions with regard to the Governor's new proposal.

First, I think it's important to put it in the context that we're really dealing with today, and that is that the Governor first surprised us

with a bond act proposal, then a budget proposal, now a federal appropriations proposal, which we're frankly struggling to keep up with.

I wanted to point out the budget language that's on the table now in Sacramento. That language calls -- would provide funding not just for studies and permitting but potentially for land acquisition and even for construction of surface facilities. And I think that's particularly inappropriate. Tom mentioned that these actions would prejudge the process. I think that's very clear.

The question I'd have for Mike would be if the state provides $67 million to pursue surface storage, and if the federal government provides up to perhaps another $140 million to pursue surface storage and some other issues, but including surface storage, if CalFed concludes that surface storage is not called for and if the state and federal governments have spent a good chunk of that funding, is the state prepared to say that surface storage is entirely uncalled for?

This would be an enormous investment in surface storage. Frankly, I question whether given that investment it would be possible for CalFed to

conclude surface storage was not necessary.

The second point I just want to make briefly is that every one of the stakeholders, not just my organization but every stakeholder is now trying to frankly scale back its involvement in CalFed in order to deal with a bond act, a state budget and now a federal budget issue. It's directly pulling resources out of this process.

And it's not just pulling them out of this process, it is -- it is prejudging the process. CalFed has billed itself as the new way of doing business and, frankly, the Governor's proposals is the old way of doing business. Somebody proposes a dam and we all go off and fight about it. CalFed is supposed to be pursuing a different track.

There were a couple of comments yesterday about whether the Governor's proposal was prejudging this process. And I said -- not prejudging but bypassing this process.

And I actually have a question for everyone around the table here, and that is, who around this table, federal agencies, ag stakeholders, urban stakeholders, environmental and fishing stakeholders, who around this table participated with the Governor in the preparation of this

proposal?

I'd be interested to hear who did participate but unless that was pretty broad participation, I think it's pretty hard to make a straight-face case that this did not bypass the CalFed process.

I'll simply close by saying that -- suggesting that what we need now in CalFed is leadership that strengthens the agencies and stakeholders around this table and doesn't pull us all away from this table. And I invite the Governor to withdraw his June 28th letter and to engage with us within the CalFed process.

Thank you.

CHAIRMAN MADIGAN: Thank you, Barry.

Ann?

MS. NOTTOFF: I'm going to ask the last four speakers to all come up to the table here, and according -- this is -- I thought -- what we asked today is people give you some semblance of some of the issues that -- environmental issues that are affecting the Bay itself, and then a couple of people are going to talk about some alternative ways of doing business and some examples of success stories in conservation.

We're going to start out with -- because of time constraints, we're going to start out with one of those success stories and then we'll move down the table here.

In his absence, I'll just say that I'm going to name this the "Bob Raab Memorial Put the B in the Bay Delta Panel" so -- there you go.

MR. BRION: Good morning.

CHAIRMAN MADIGAN: Good morning.

MR. BRION: Sorry for asking to be taken out of turn. I'm supposed to be somewhere else at 11:00 so I think I'm a little late.

CHAIRMAN MADIGAN: Thank you for staying this long.

MR. BRION: Yeah.

My name is Craig Brion (phonetic). I've worked for the last five years as the advocate for the Santa Clara Valley Audubon Society and I work very closely on a lot of development issues in the region, plus a lot of the water district's concerns.

I'm going to talk a little bit about how that five years has shown me that some of the solutions and some of the directions that I think you should be going in are already occurring. Our region, for a variety of reasons, has faced some of

the issues that you and many other communities around California will have to face.

Much of it comes down to what I call the remarkable fact which is that Santa Clara County is consuming no more water now than we did roughly ten or more years ago.

If you look at the graph of water consumption in Santa Clara County, it peaks around 1985 to 1988 at around 400,000 acres feet or so. It goes down during the drought, but after the drought it does not jump back up to previous levels. It jumps -- it comes very slowly to a point to where now we are back at those historic high levels.

But that means that we have gone more than ten years in the Silicon Valley area through some of the greatest boom time economy that this state has ever seen, adding hundreds of thousands of people, jobs, companies to the region, and we are consuming no more water now than we did then.

Now, the drought in the early '90s was only part of that. What it really has been is that we have adopted a drought mentality since then as well. When the drought ended, we did not end our conservation advertising in newspapers, radio, television. We did not end our programs of rebates

on ultra low-flow toilets and other water-efficiency measures.

We essentially maintained that California is in a state of perpetual drought if that is defined as supply not meeting everybody's desires. And we have maintained an attitude that says that we will, are and will remain in a drought mentality until -- for as long as we need it. And that will probably be forever.

One of the most interesting results of recently has been the water district's integrated resource plan which was done in 1996. I have been involved in a lot of stakeholder processes in my five years or so with Audubon, probably about a dozen or so. It has led me to often lecture on the value of benevolent dictatorship over consensus processes. I don't think that many of them are very successful, at least not in the time spans and with their goals. But this one worked.

Our time span was March to November of 1996. We met that time. Our goal was that in critical dry years our region by the year 2020, given development scenarios, could be up to 100,000 acre feet short of water. In wet to normal years, we're going to have an adequate supply most likely

even given the development scenario of our area.

But in those dry years we have about a 100,000-acre foot shortfall. So the group was supposed to come up with a package of concer -- of proposals from a menu, a very large one that we were given, that would fill that 100,000-acre foot gap. And we did that in the six or eight months that we had.

Once we did it, it took only two months for the water district board to unanimously adopt our proposals and the process simply worked extremely well.

What we came up with from this huge menu of possibilities was a package that emphasizes four things: Water banking, recycled water, demand management of conservation and long-term transfers.

Now, there were 21 people around this room, only two of us representing the environmental community, and that was the package we came up with. That included people from the irrigation companies around our area, three members from the business community, the Farm Bureau, the Cattlemen's Association, two or three members from local government, regional/local water supplies agencies, any number of these people.

And we all came to this conclusion of water banking, recycled water, demand management and long-term transfers was the answer for our region to the year 2020.

Prior to that, several -- a few of the water district board members had been leaning in favor of a new storage reservoir in our county, most likely in the Coyote Creek system, very valuable habitat.

That was given almost from the outset by this group very low priority for good reasons: Costs, the inflexibility of committing to a dam and not being able then to adapt to situations, changes in demand over time, the uncertainty of the permitting process and the environmental impacts.

Essentially, once people were explained that these other things had been working, as I said, not increasing our water consumption in ten years, some of these other tools had been working and many of these tools like banking could work to fill that gapped supply, people realized that we could come to a cost-efficient and environmentally very low-impact solution despite -- once again, despite the fact that we project booming growth for the next 20 years.

We are perhaps lucky or unlucky in that we are being forced to deal with these issues faster than most other communities because of our wastewater problems as well. Our conservation efforts, our height and our recycled water efforts are mandated by the fact that our flows to the Bay are harming endangered species there, much as some of the mandates you're working under here.

But I think some of the lessons of the recycling that we're doing, the conservation that we're doing -- and I don't have time to go into specific programs, but they're well worth taking a look at -- are going to be the exact situations faced by many communities around the state and we are already solving many of their problems in an area where you could probably say the problems are virtually the most difficult to solve due simply to our development scenario and our placement in the bottom of the Bay, a very sensitive environmental area.

Finally, I just wanted to quote a bit from an article I wrote to our membership last year, and I think it's still roughly the same opinion that I have. I talked about the possible changes due to the CalFed process and I said that two simplified

versions of our potential futures look like this:

No. 1, an honest attempt is made to reform water rights, pricing, delivery and consumption and to balance the needs of California's growing populations with the needs to restore a remarkable ecosystem.

Or, No. 2, the environment and environmentalists are bribed with insufficient restoration dollars into living with the decision that increases the ability of agriculture and urban areas to slake their unending thirst, leaving just enough water for habitat in the Delta to stave off complete collapse, while continuing the stupidity freshwater policies of the past.

I believe that Santa Clara County has already, at least locally, faced some of these issues and is making a lot of the right choices, and I think that you have the opportunity to influence the rest of the state to do the same.

Thanks. Sorry, I must go.

CHAIRMAN MADIGAN: Thank you very much. Thanks for your time this morning.

Out of here. Okay.

Yes, ma'am, good morning.

MS. SCHAEFER: Good morning. Can you

hear that all right?

My name is Nancy Schaefer (phonetic). I'm the coordinator of a project called the San Francisco Bay Joint Venture, which is a public/private partnership of public agencies, environmental organizations, business and agricultural representatives working to increase the amount of wetlands around San Francisco Bay.

My job here today was to talk about wetlands losses, but I sort of want to take a bad news/good news approach. There have been a lot of wetlands lost in the Bay but there are a lot of efforts that are ongoing to address those losses.

Now, a lot of the information that I'm giving you today is coming directly out of the San Francisco Bay Regional Wetlands Ecosystem Goals Project. This has been a three-year process with over 100 scientists from state agencies, federal agencies, universities and nonprofits as well to come up with goals for the various types of habitats in San Francisco Bay.

Peggy Olafson (phonetic) with the regional board is here. Somewhere. There she is.

If you have any specific questions about the Goals Project, I encourage you to address them

to her. She spent a lot of time pulling these together as the project manager on this enormous task.

What they've done is they've looked at the needs of a whole variety of species, a whole suite of species that uses the wetlands complex of the Bay, fish, invertebrates, mammals, birds, and come up with habitat recommendations. This draft was put out in late June and this past week there's been public workshops on it. Peggy's probably delirious from that so you might want to hold off on your questions until she's recovered.

I had planned to put up some big maps but in the interest of time, what I'll do is just highlight where some of these things can be found hopefully in this packet that you've received.

What's in the packet is a map that was prepared by the San Francisco Estuary Institute in support of the Goals Project. It shows the historical view of wetlands distributions and the modern view.

And you can see that there's been -- there's been enormous losses. It's approximately 150,000 acres that have been lost of tidal marsh. This doesn't include non-tidal marsh, riparian,

vernal pools and other seasonal wetlands because that information has not been as well documented. It's difficult to come up with those numbers.

So bear in mind we're talking 150,000 acres of tidal marsh. We don't know exactly what the losses are in seasonal marsh. But if you look at some of our -- our creeks and rivers, you get a sense that there's been enormous losses there as well.

The role of the joint venture then, and this is part of the good news, the role of the joint venture is to implement the goals through acquisition and restoration. And we're taking the goals in numbers and increasing it because we cover a slightly larger geographic area. And then we're trying to figure out ways to actually implement these goals, whether it's meeting with landowners, coming up with private incentive programs or trying to get additional funds for public acquisition of properties.

There are four major areas that the Goals Project has addressed: Suisun Marsh, North Bay, Central Bay and South Bay. I just want to briefly run through some of these areas and talk about the losses.

In Suisun Marsh we've lost about 65 -- we've gone from 65,000 acres of tidal marsh down to 9,000. A lot of this is in managed seasonal marsh which is actually good habitat for waterfowl. This is not something we want to screw around with too much, but there is a need to restore some tidal marsh in the area. And the Goals Project has come up with a recommendation to increase tidal marsh in Suisun Bay -- or Suisun Marsh area, and this also includes the Contra Costa shoreline as well, from 9,000 to 30 to 36,000 acres.

There's a lot of different ways this can occur. Working with some of the private duck clubs to enhance some of the habitats on their properties. On the Contra Costa shoreline there's a lot of work being done by East Bay Regional Park District and the Contra Costa Mosquito Abatement District, of all organizations. They've been very active in restoring tidal marsh, particularly on the Concord Naval Weapons Station.

And they're in the process of installing a high-tech tide gate at Shell Marsh as we speak called the Necktime Gate that will improve tidal flows. Don't you love that, Necktime Gate? Sounds like something out of Star Trek. Anyway, it will

improve tidal flows to Shell Marsh.

In the North Bay, the loss has been something like 71 percent of tidal marsh, mostly due to diking and draining for agricultural purposes. The Goals Project has set a goal of -- to increase tidal marsh from 16,000 to 37,000 acres. Some of this can be accomplished on lands that are already in public ownership that just need some restoration work.

For example, Culligan Ranch (phonetic) has been in the ownership of the Fish and Wildlife Service for a number of years but due to funding and technical difficulties, it has not been restored to tidal marsh yet. And that -- that is under way. And in fact, a CalFed grant did go to Culligan Ranch to help with the restoration.

Also the Napa River, another CalFed grant, a million dollars went to that project. The City and County of Napa have come up with a very innovative approach to flood control on the Napa River, setting back levees, acquiring properties, restoring habitat to those areas.

Moving on to the Central Bay. Central Bay historically did not have a lot of tidal marsh but they've still lost 90 percent of what they had and

riparian areas are pretty well trashed. Those that haven't been put in culverts are pretty well trashed, put it that way.

The Goals Project is only making a recommendation of a few hundred acres for tidal marsh because the opportunities are somewhat limited, and yet there are still restoration projects going on.

For example, the Port of San Francisco is restoring about 15 acres at Pier 98 in the Bayview/Hunters Point area, the park service is restoring Christie Fields (phonetic), 20 acres. Their efforts to restore tidal action to Lake Merritt and also, for example, there are a lot of efforts to restore creeks, Salzo Creek (phonetic) in Oakland, Codinices Creek (phonetic) in Albany.

Moving down to the South Bay, the losses have been about 84 percent of tidal marsh. Now, this area has not been diked and drained for agriculture, it's been used for salt production. Out of the approximately 75,000 acres of Bay lands in that area, 20,000 fortunately is under the ownership of the San Francisco Bay National Wildlife Refuge so it's managed by the service.

Another 30,000 acres or so are still in

private salt production, which isn't necessarily a bad thing. It does provide a lot of quality shore -- not quality but -- some of it's quality shore bird and waterfowl habitat. But the Goals Project is hoping to go from 9,000 acres of tidal marsh existing to 24 to 29,000 acres of tidal marsh.

Now, some examples of projects that are under way down there Bear Island, I think a lot of you have heard a lot about this, Peninsula Open Space Trust became local heroes when they purchased this property for 15 million and are trying to come up with -- their fund-raising five million privately and working to get ten million in the federal and state appropriations to put the property in the ownership of San Francisco Bay National Wildlife Refuge. And we have already secured enough funds to begin enhancement planning on the process -- training on the 1500 acres to restore it to tidal marsh.

Mira Loma and Heyward, 364 acres that was recently restored to tidal march and seasonal wetlands. Arrowhead Marsh, Port of Oakland, Coyote Creek, Alameda Creek, all of these areas have watershed plans under way on them and they're in the process of being implemented.

So to summarize, then, the Goals Project is basically looking at -- and again I want to emphasize this is still in draft form, these will be refined as time goes on -- is recommending an increase of 60,000 acres of tidal marsh in San Francisco Bay and including Suisun Marsh. They also recommend more freshwater flows.

Now, as I mentioned, the goal of the joint venture is to implement the Goals Project. And some of the ways that we're doing that is by assisting with all the projects that are under way. This map with all these little tiny projects on it gives you an idea of the approximately 40 to 50 projects that we're tracking and trying to assist with the completion of.

Our early estimates of what we need to implement the goals is $20 million over the next 20 -- for each of the next 20 years. Now, we're looking at both private and federal and state sources for those.

And there's another sheet in your packet called the Wetlands Restoration Program. It talks about the losses, what we're trying to do and the various sources of funds that we're looking at. CalFed is one of those funding sources that we're

looking at. We don't expect CalFed to be the answer to the Bay's problems but it is a very large sum of money going to ecosystem restoration.

It would be nice if the Central and South Bay were included in the Ecosystem Restoration Plan so that as this 20-year ecosystem plan is implemented, funds would be available for projects in the Central and South Bays.

Part of the reason I have to run is because another funding source that we're looking at is the Land and Water Conservation Fund, and there's a panel this afternoon that we've set up to come up with the regional strategy for land and water.

So we don't want you to think we're looking to you for all the answers. But we do want to make a strong recommendation that the Ecosystem Restoration Plan incorporate the goals.

Thank you.

CHAIRMAN MADIGAN: Thank you very much. This is very helpful.

Ann?

DR. LUOMA: My name is Sam Luoma (phonetic). I'm part of a team of scientists at the U.S. Geological Survey who have been working on San Francisco Bay and the Delta since the mid-1960s.

And my role here today is to talk a little bit about the science that supports the concept that if we're going to have a fully successful San Francisco Bay and Delta restoration program, one that reaches its full potential, it will require a full ecosystem view.

If there's one thing we can conclude from our studies, again, our 30 years of studies in this ecosystem, it's that the embayments of the San Francisco Bay system are tightly interconnected and that what you do in one part of the Bay has great implications for what you do -- for what happens elsewhere in the Bay.

So both the implications of management associated with the decisions that are made here and the restoration program need to include San Francisco Bay at least from the science that we've -- that we've looked at.

I'd like to show a couple of slides, if I could, to go along with that and I'll -- Ann can just cut me off at any point if I -- if I go on too long. I'll try not to.

There are two points I want to make. First of all, San Pablo Bay, South Bay and Central Bay have immense expanses of shallow-water habitat and

in some cases a lot of -- as we've heard about, a lot of potential marsh to develop. Actually, historically two of the largest and most successful fisheries in the Bay area were associated with those habitats at one time.

The Oyster Husbandry Fishery of the late 1800s was the largest fishery in California at that time. It collapsed in the early 1900s. The Dungeness Crab Fishery supported around the Farallon Islands was a very successful fishery supported by a nursery in San Pablo Bay. Again, that collapsed in 1960.

So if we're going to take full potential or take full advantage of the -- of the potential for restoring the San Francisco Bay and Delta ecosystem, it seems to make sense that we take advantage of the expanses of potential habitat we can restore in these parts of the Bay itself.

The second point and perhaps the most important point -- sorry.

Thanks.

Okay. The most important point is that the complex of interconnected embayments, sloughs, marshes and channels and rivers in the estuary are very tightly connected.

They're connected by the flow of water. They're connected by the movement of particulate material both up and down the estuary. They're connected by the movement of carbon, which is the base of the food web, you can't make fish without carbon. And carbon flows through the system in this system as I'll show in a second.

They're connected by the movement of animals from all the bays to one another and they're connected by water quality issues. Bad water quality in one part of the Bay can affect the success of fisheries in another part of the Bay.

So again I'd like to show just a couple examples of those, if I could.

Obviously, the quantity of fresh water that comes into the San Francisco Bay system from the Sacramento River and the San Joaquin River determines the salinity gradient that we see through Suisun, Carquinez Straits and Pablo Bay and the Central Bay.

This year in 1997 with the El Nino, we actually saw fresh water at the surface in Central Bay for a period of time. As water diversions have increased over time, in low-flow years we actually find increases in salinity have occurred

progressively at the Golden Gate.

The organisms that live in the estuary are tightly adapted to this changing salinity regime obviously. So when we manage water in the estuary -- in the rivers and the Delta, we're managing the salinity gradient in the whole estuary. And that doesn't just end right here in Central Bay because the inflow of water from the Delta also has huge implications for South San Francisco Bay.

In 1995, in a simplistic example, we found water hyacinth floating down here around the San Mateo Bridge during high flows. Well, the only place you can get water hyacinth in this system is upstream in the San Joaquin River. Obviously, that water hyacinth had not only floated all the way downstream but it floated down fast enough to get there before it -- before it decayed away.

In a more sophisticated sense, every year the South Bay is flushed by the high flows from the -- from the North Bay as long as those flows exceed 40,000 cubic feet per second.

So the South Bay sits down here as a relatively stagnant embayment which receives millions of gallons of wastes from our surrounding cities, although fairly well treated, still millions

of gallons of waste per day, and that water has a residence span of something like 160 days, about four months, during the summer.

When the flushes come from the North Bay, that water turns over, it reinvigorates the South Bay system. And, again, when you're managing fresh water up here, one is managing the quality of South San Francisco Bay.

Particles in an estuary actually move upstream under certain flow regimes. We know that because when we thought about dumping dredge spoils off Alcatraz, the assumption was that all those would go out to sea. Now we know, of course, that most of those dredge spoils go about back to where they came from.

The major particles here in Suisun Bay in a hydrodynamically crucial portion of Suisun Bay and ecologically crucial, actually come from San Pablo Bay is what we've learned recently.

When we study sediments up here in Rio Vista, we're actually looking at the industrial signature in the summertime of those sediments from Suisun Bay. So throughout the system, the Bay is interconnected not only by downstream flow of water but also by upstream flow of water and particles due

to the complexities of hydrodynamics.

The most important factor in an estuary in terms of producing fish, the basic fundamental limiting factor is carbon. We see, if we look at correlations across lakes, estuaries and the oceans, the amount of fish that you produce is tightly correlated to the amount of carbon that's produced, the amount of nutritious carbon that's produced.

The range of carbon production across all estuaries is from 6 to 600 grams carbon per meter square per year. It means about 150 to 200.

North San Francisco Bay, Suisun Bay and San Pablo Bay is very poor at producing carbon. This is what we produce in North San Francisco Bay as best we can tell, San Pablo Bay and Suisun Bay, about 20 grams of carbon per meter square per year. 150 to 200 is the average. We're about 10 percent of the average estuary.

That puts a ceiling on what your fisheries can produce unless you can get the carbon from somewhere else. In North San Francisco Bay the source of carbon is the rivers. And that source of carbon is tightly linked to river flow.

This -- my wife told me that if I did this it would glaze everybody's eyes, but I'll still show

you the correlation.

(Laughter.)

The annual mean -- this is annual mean river flow on the X Axis, this is nutritious carbon or algo-derived carbon from the rivers. On the Y Axis it shows is the tightness of the correlation between river flow and carbon input to Suisun Bay and San Pablo Bay.

When we're managing river flow, we're managing the nutrition for Suisun Bay and for San Pablo Bay that will determine how much fish can be produced in those systems. The linkage between the inflow of this nutritious material and the production of organisms in those systems is tight.

Well, by the time river water gets to South Bay all the way down here, most of the nutritious carbon has been consumed. Nevertheless, river inflows are crucial for managing the production of the South Bay fisheries. Every year in South Bay -- in South Bay the primary source of carbon is produced internally.

In this case, there's enough production of phytoplankton, that is, the tiny plants that can take nutrients from the water column and sunlight and turn them into -- turn them into nutrition --

nutritious carbon. There's a phytoplankton bloom in South Bay that occurs once a year every year for a two-week to six-week period, and that produces about 70 percent of the material that feeds that Bay for the whole year, for each year.

That phytoplankton bloom occurs when freshwater flow penetrates into South Bay. It's tightly coupled to the river flow in the Delta. And in years of high river flow, 1983, we get a lot more carbon. In years of low river flow, we look here like at 1992, one of our lowest river flow, we get low carbon.

This year in an El Nino year we've never seen so much carbon produced in South Bay in all our years of study -- in all these years of study.

Again, the important thing is that when you're managing water in the North Bay, you're managing the South Bay and the tight coupling of the ecology of the South Bay.

Finally has to do -- another issue is our water quality issues. This slide shows selenium concentrations -- selenium contamination and it's spread through Suisun and San Pablo Bay.

Traditionally, the primary sources of selenium in this system have been around Carquinez

Strait at the refinery. Selenium, of course, threatens the health of two of our most important organisms in the Bay, sturgeon, white sturgeon and scutter which live in San Pablo Bay, and this slide is just to show that even a single source of contamination in this part of the estuary can affect both this part and this part.

This selenium issue is also important from the point of view of water management, though, also because as a second source of selenium in this system is the San Joaquin Valley, of course, as we all know. That's been a really recalcitrant problem.

Well, when we think about solutions, water management solutions, some of those solutions involve changing the balance between Sacramento and San Joaquin water, bringing more San Joaquin water into the system. Until we think about the solutions to both the pesticides and the selenium problems in the San Joaquin, we've got to think about the implications all through the Bay of bringing more selenium-laden water into the system.

Finally, the parts of San Francisco Bay are coupled -- are interconnected by the fish communities themselves. These are bullets taken

from -- and I won't go through all of them -- but they're bullets taken from the San Francisco Estuary Project Status and Trends of Resource Species written by Bruce Serbo, Alan Jaspe and Peter Moyle (phonetic).

And they talk about the fish community in Central Bay, San Pablo Bay and Suisun Bay and how they're each -- in each case they're a mixture of fish. For example, in Central Bay they come from the ocean, the South Bay and the freshwater regions to the north.

San Pablo Bay, which we know very little about ecologically, but what we do know is that it's got -- it's got a very diverse fish community that can tolerate a range of salinity. In the summertime fish come in from the ocean, the South Bay. In the winter during high flow, fish come in from upstream during low salinity. As I mentioned, San Pablo Bay was the nursery for our successful Dungeness Crab Fishery.

Anadromous fish including shad, salmon and striped bass make their way through the -- through San Pablo Bay. As a matter of fact in the 1970s striped bass fishery, one of the things that limited the anglers' enjoyment of the striped bass fishery

or consumption of the striped bass had to do with lesions that were very abundant in the striped bass, at least at that time, which we know now are probably associated with exposure to certain kinds of pollutants in the North Bay system.

In other words, water quality in the North Bay system affected the usefulness of striped bass. So if you produced -- even if you produced more striped bass upstream, you still have that limitation downstream. And, of course, San Pablo Bay is crucial for migratory wading birds and diving ducks.

Now, we're concentrating in the restoration efforts so far on some of the anadromous fish and some of the fish unique to Suisun Bay. But Suisun Bay also has a large number of very important species that range throughout the system.

It's interesting, and I think this is a little bit of an overstatement, but it's interesting what Herb (inaudible) said about the western Delta: Supports very few species and very few individuals compared to downstream.

That doesn't mean there aren't important fish up there. It means that downstream we've got a tremendously diverse community that is a part of

this system and tightly linked into the system.

So I'll end there and just again to make the point that this is a full ecosystem. Ecosystem restoration is really hard. We don't really understand yet how to make -- how to bring back the things that we've -- that we've damaged.

But we do understand that what happens in one part of the system is highly dependent upon what we do in the other parts of the system. And to draw our boundaries too firmly and exclude San Francisco Bay from the -- from the restoration efforts, and especially the analysis of the implications of these efforts, is from the viewpoint of most scientists I know, pretty shortsighted.

CHAIRMAN MADIGAN: Cool. Very, very cogent.

Pietro, I never really thought of your salmon catch as nutritious carbon before, but it works.

MR. PARRAVANO: Does change the perspective a little bit.

MS. NOTTOFF: Our final speaker will be to give us an idea of some of the solutions that we think that CalFed should be pursuing that will help us maximize our opportunities for doing some of the

type of restoration you've heard talked about.

MR. GLICK: I'm not talking about fish, my apologies, or not, as the case may be. I've been asked instead to talk about some work that we recently completed looking at the CalFed water use efficiency technical appendix. And what I'd like to do is summarize some of the results that we came up with in that work.

My name is Peter Glick (phonetic), I'm the director of the Pacific Institute for Studies and Development, Environment and Security here in Oakland. We're a nonprofit research institute, we're funded primarily by foundations. But the work we did that I'm going to be discussing today, was requested by the Department of the Interior by the Bureau of Reclamation.

And I'd like to acknowledge my co-author, Dana Haas (phonetic) in this work.

First of all, let me start by urging CalFed to -- and BDAC in particular perhaps, to spend a little more time than I'm possibly going to be able to spend discussing this issue. There are some technical issues here, there are methodological issues, there are data issues, there are policy issues. I have a very short period of time and it's

a very big problem and I urge you to spend more time in the future thinking about them.

Second of all, I wanted to start by thanking the CalFed staff during the process of reviewing their technical appendix. They were very patient with us as we worked our way through that appendix. They're open to criticism and I have to say we understand the difficulties that face them in trying to evaluate the potential for water use efficiency and demand management improvements in the State of California.

Many of the errors that I'm going to talk about are not the result of intentional miscalculations. They're the result of the fact that for a long time water use efficiency at the state level has been underfunded, it's been ignored, it's been misunderstood by a number of people responsible at the state planning level for thinking about these issues.

Because in part, many of the important data aren't collected or if they are collected, they're not made available to the right people. And also in part because the individuals who tend to be responsible for them then not to get the rewards and attention that many in the more traditional water

supply planning areas receive.

I'd also like to note at the beginning that a lot of progress has been made throughout the state in water use efficiency improvements and conservation. But I'll state at the beginning that we are nowhere near the limits of what is technically feasible, economically feasible or socially acceptable, despite some of the comments you may have heard from other people who disagree with me.

I think this is true in all sectors. It's in the urban sector. It's true in the agricultural sector. It's true in residential, commercial, industrial, municipal. It's true in all of the sectors.

Furthermore, the potential exceeds what is described as available in the CalFed water use appendix. And that's what I'm going to talk about specifically today.

Let me start by summarizing our conclusions.

First of all, getting the numbers right is critically important. The numbers affect estimates of future demand, they affect the costs of structural and nonstructural options and they affect

all of the modeling work.

There was some effort in the water use efficiency component technical appendix to downplay the importance of the numbers. To say, "Look, we don't know what the numbers are but the truth is they're not all that important. Let's implement as much as we can and we'll go on from there. We'll focus on supply reliability rather than this gap between supply and demand projected by many of the -- by the state water agencies."

I don't think that's correct. In fact, the numbers themselves, the projections of future demand and the potential for reducing that demand with water use efficiency improvements affect directly the modeling work that's done, it affects the impact assessment that CalFed is doing, and it affects the economic risk modeling efforts that are being done. All of those numbers are in in the modeling efforts and if we don't get the numbers right, then the answers that come out of those modeling efforts are also not right.

And my second conclusion is the numbers aren't right yet. In particular, the CalFed water use efficiency component technical appendix underestimates substantially the potential for

cost-effective water use efficiency improvements in all the sectors, in urban and agricultural sectors.

Now, having said that, there is no accurate estimate of the true potential yet and there may never be. There are a lot of uncertainties. I'm going to describe some of the uncertainties. But our assessment was limited to looking at the assumptions and the numbers that went into the technical appendix, and our conclusion is that there's substantial problems with that that lead to underestimates of the potential for cost-effective improvements in water use efficiency. And I'll come back with some specific examples later.

Among the problems are methodological problems, which I'll touch on, computational problems, which can be fixed, and then there are a whole series of data that simply either have not been collected or not been made available in this analysis.

And I have to say right at the top, I really believe the biggest problem is not with the CalFed analysis but with some of the basic data that they were forced to use that come from the Department of Water Resources Draft DWR Bulletin 160. Which many of you know, if not all of you, is

the draft of the long-term California water plan on which much of the California future estimates of demand and supply are based. There are serious flaws in those numbers.

CalFed staff worked very hard to try and get around some of the more serious flaws that exist there but not entirely successfully.

Finally, great uncertainties still remain. The magnitude of the potential for conservation is not any single number. It depends on water prices; it depends on the design of rate structures and the design of physical structures which you're wrestling with; it depends on existing and developing technology, some of which we know about and some of which we don't know about; it depends on public opinions and preferences and it depends on the policies that water agencies and water managers implement.

There is no single number for the potential for demand management in California. It depends. Because of that, and I want to emphasize this, there is no single common program water efficiency number. You cannot say that there is a certain amount of water conservation potential and then that applies to preferred Alternative 1 or 2 or 3 or whatever the

preferred alternative will be.

It's going to depend on the price, the cost of those alternatives. It's going to depend on the policies that are implemented.

Let me touch on some of the methodological problems. I've already mentioned the first one. There is no single estimate of the possible savings, it depends on a lot of different things.

The second methodological problem I want to address, and this is a pretty fundamental one, the Department of Water Resources and CalFed tend to treat water use efficiency as a supply option, improvements in the efficiency with which we use water conservation options, demand management options, as the ability of those options to produce new water, to produce supply. And that's the wrong way to think about it.

Improvements in water use efficiency, demand management are reductions in projections of future demand. They're not -- they also sometimes I would say produce new supply, real water as the term is used sometimes incorrectly.

But the most important part of it is to think about demand options as reducing future demand. And I'll come back to this later. This one

problem alone reduces future demand estimates in California by a million acre feet a -- more than a million acre feet a year.

A third major methodological problem is that economic principles in general are very inadequately treated in the water use efficiency technical component. There's very little attention to the cost of water use efficiency improvements and demand management options. Demand and supply tend to be treated pretty much independently of costs and prices and subsidies and market forces, and therefore, they're unrealistically and incompletely treated.

Where they are treated, in a very small section of this appendix, the cost of conservation options are mostly wrong. There's a single table that comes from the Department of Water Resources. It lists the demand management options ranging between three or 400 and 1800 an acre foot.

Those numbers are widely agreed to be inadequate. They look at a very small subset of the data. And in particular, they reflect perhaps the upper end of current estimates but not the lower end. In some cases --

(End of tape)

-- the cost is zero. There is no cost to improving the efficiency of certain kinds of water uses.

And in our full report, which I should have mentioned at the beginning was handed out, there are a number of tables that describe demand management option studies that have -- that list very large numbers of improvements that are available at very low cost or payback periods of under a year or payback periods of one to five years. It depends on what your assumptions are and what your desired payback periods are.

But there needs to be a much more -- a much better analysis of the cost of conservation options than has been done so far. And the costs obviously are critical to much of the rest of the problem. In particular, since the cost of conservation options is going to be compared quite directly with the cost of supply options, and ought to be compared that way.

Now, let me talk a little bit about some of the data and information problems. And, again, there's an enormous amount of information that's in the full report that is not -- that I won't discuss here, but I want to give you a flavor of some of the

major issues.

Again, I mentioned this first one, that the technical appendix relied very heavily on the demand analysis of the Draft DWR Bulletin 160 which has a number of major methodological and data flaws, and those flaws lead CalFed to underestimate the potential for cost-effective efficiency improvements in all sectors and to overestimate future demand for water. And this 2020 demand for water is the critical issue which I'll come back to again.

Again, I've said this but I want to emphasize that these errors make a difference. The numbers are very important for all of the modeling that's gone on. In the matrices you saw this morning, for example, you saw pluses for the common programs of one and two in terms of their effect on certain fisheries.

Those numbers, those pluses, those decisions about what the relative benefits of the common programs are, depend on, in part, the assumptions for what 2020 demand for water is going to be.

If we've got the 2020 demand for water wrong, all of the modeling estimates for the costs, for the -- where water is needed, when, how much

water is going to be able to be provided by the existing systems, all of those are not going to be right either.

The potential urban demand management ignores many existing cost-effective technologies and policies. I'll come back to a specific number example in a moment.

Detailed residential end use studies in California and in the rest of the United States suggest that we can reduce indoor and outdoor urban water use to well below the levels assumed even by the more aggressive CalFed water use efficiency assumptions. And I'll come back to a specific number in a minute.

In addition, the potential for new and developing technologies over the next 22 years, between now and 2020, is excluded entirely. And if you think back 22 years, you'll know that we're going -- we're going to miss some things that are happening.

In addition, the value and scope of improvements in irrigation technology is under -- are underestimated. More quantitative analysis is needed in the potential for decreases in, separately, evaporative losses, transpiration

losses, reduced energy in economic costs of overapplying water and improvements in water quality from changes in agricultural water use. Again, the full report has a lot of detail about this.

One of the critical issues is agricultural water use is treated as evapotranspiration, as a single unit. But there's a difference between evaporation and transpiration and different water use efficiency and conservation techniques and policies applied separately to each of them, and they need to be better treated in both cases.

Now, I said at the beginning that numbers matter. Let me give you a couple of examples.

Reducing indoor residential water use in the State of California by 2020 to 45 gallons per capita per day would save an additional 530,000 acre feet of urban water demand. That's just a number.

Now, it turns out that the American Waterworks Association recently completed a massive end-use -- residential end-use water survey. They looked at thousands of homes. They metered very carefully thousands of homes. They took literally millions of measurements of individual water use, and their conclusion was current indoor water use is already below the level assumed in 2020 by DWR and

for today -- for 2020. Today it's below it.

And what they say is that we can reach 45 gallons per capita per day per person with five existing well-understood conservation measures. Today we can reduce indoor water use to 45 gallons per capita per day with ultra low-flow toilets, with horizontal access washing machines, fixing leaks, and two others, and they're listed. And there's an interesting table you should look at in the full report.

So this is not a particularly aggressive assumption. This again says no new technology, unless you consider horizontal access washing machines new technology, and I note they're going out the door faster than the manufacturers can produce them right now.

And specifically in that regard, an estimate of replacing all vertical access washing machines in California by horizon -- with the existing generation, not new technology but the current best horizontal access washing machine available already on the market, would save between 170 and 200,000 acre feet of water in the urban sector alone. Just an example.

Second, DWR's assumed current urban

baseline demand is too high and it's adopted by CalFed which is why I raise it. And you heard a little bit about this from the gentleman from Santa Clara who observed that Santa Clara is today using no more water than they used 20 years ago with a much larger population, with a much more energetic economic situation.

This is true of EBMUD, it's true of the Metropolitan Water District. Basically, our baseline has not changed very much in the last 10 or 15 years, but the baseline assumed by -- the current baseline assumed by DWR is much higher than the current baseline actually is.

This has been a subject of hearings by Senator Johannssen's committee up in Sacramento. It's a big -- a big question of -- it's a big issue of discussion now with the California Research Bureau which is looking into this issue. The results of it are if you assume the wrong baseline today, then what you're assuming for 2020 is also incorrect.

If the baseline is too high today, then the projected increment is too high. And our estimate is that if you correct that, again you reduce 2020 demand by approximately a million acre feet a year.

A couple more examples.

Every time you save one percent in irrigation efficiency in California you save on the order of 300,000 acre feet of water. Some of this water can be new water reallocable to somebody else, some of it is improvements in water quality for somebody else. It varies depending on where it is and how it's saved.

But our estimate -- well, just to give you one more example. A one and a half percent reduction in current irrigation efficiency in California saves more water than is estimated to be saved by the current best management practice, the voluntary best management practice that's being adopted in agriculture.

And our estimate is that the potential for saving -- the potential for improvements in irrigation efficiency are many percent. Despite some of the testimony that -- by the agricultural community that we're already extremely efficient, there is enormous potential for improving that efficiency further.

In that regard, I acknowledge the efforts that California agriculture has made in the areas of precision irrigation over the last several decades,

but I'd like to point out that huge potential still remains. And I think this potential exists both for applied water and for new water savings which is a distinction which I'd rather not get into with the short time I have but which is described in this whole report.

I'd like to note that even in 1991, which was the last time a full statewide survey of this was done, more than half of all California vineyards were not using drip irrigation. More than 80 percent of orchards in California are not using drip irrigation. And a sizable fraction of them are still using flood irrigation, flood and furrow irrigation, which leads to enormous unproductive evaporative losses.

The same survey showed -- and I can actually show you an overhead of this. This is a survey of California irrigation technology in 1991 for field crops, vegetable crops, orchard crops and vineyards showing what fraction are under drip which is blue, sprinklers which is this pink color, and surface irrigation which is yellow.

And you can see, as you might expect, that as you head from field crops toward vineyards, the more expensive permanent kinds of crops, you get

much more drip irrigation, much less surface irrigation. But there is still 45 percent of California vineyards that are using furrow and surface irrigation techniques and still in orchards, as I said, less than 10 percent or about 10 percent of California orchards are on drip.

Not all of California orchards will ever be on drip, or should be. Not all of them ought to be not using furrow. But there's enormous potential still for improving the efficiency of -- for reducing evaporative, unproductive losses in California agriculture. And I note there has not been a statewide survey done since 1991 on this. There have been additional improvements since then but it's one of the data gaps that we still have.

You heard some testimony from Westlands last time when you were in Fresno about how efficient they've become, about the crop switching that's occurred in Fres -- in the Westlands irrigation district. All of that is true but I would argue that there is still enormous potential in Westlands as an example, not to -- not to isolate them, as one example.

For example, they still use furrow flooding or a combination of furrow with pre-irrigation with

sprinklers on 70 -- 76 percent of their irrigated acreage. That's changed somewhat over the last decade. 76 percent is the current number. Precision drip irrigation is still used on less than 10 percent of their acreage.

Finally, let me make a couple of comments about implementation. In recent years there's been a change in the effort in water use efficiency and demand management away from programs run by state agencies towards the voluntary best management practices both in the urban and the agricultural areas. And I'm all in favor of voluntary programs.

But the truth is that the BMPs are only one mechanism for achieving conservation potential. And they're, in my opinion, woefully incomplete and inadequate. They nowhere near touch the potential that's available out there, the cost-effective potential that's out there.

And in some ways, they per -- they get -- these BMPs have permitted state agencies to say, "Okay, we're doing the voluntary things that we can do" and not to do the other things that state agencies should have a responsibility for doing.

In that regard, the water use efficiency technical appendix, the component of CalFed, says:

"Implementation of efficiency measures will occur mostly at the local and regional level by local agencies, not by state and federal CalFed agencies."

Now, to the extent that this is true, CalFed should still develop guidelines and standards for local and regional organizations to assist the implementation of water use efficiency programs and to help state agencies monitor those programs. But it's not, I believe, entirely true. In fact, I think there remains an extensive role and an extensive responsibility for state and federal agencies to do things related to water use efficiency and conservation.

State and federal agencies can modify price structures under their control. They can implement technology standards or environmental standards that are -- that make sense only at the state or federal level, not at the local or regional level. They can fund technological development and they can change the rules that govern the water systems that state and federal agencies operate.

State and federal agencies have the responsibility to look at that side of the problem as well, not just to devolve all of this to regional

and local government.

In addition, by ignoring these avenues for implementation, we argue that the CalFed technical use appendix underestimates not just the potential for demand management improvements, but the likelihood of implementing those improvements. And that's an important factor as well.

My last overhead.

CalFed also emphasizes incentive-based actions for demand management over regulatory actions. And again, I have no particular problem with that. I'm all in favor of incentive-based actions. And in fact, one of the greatest barriers to water use efficiency improvements is the disincentive that the current price structure often provides.

But limiting actions, implementing actions, to those based on incentives alone reduces the potential for a wide range of effective, potentially effective water use efficiency programs and options. It fragments policy-making and it rules out federal and state actions that are valuable, effective and more efficient than comparable local actions.

Examples of effective state or federal actions include certification and labeling programs,

reductions in subsidies for inefficient water use from government-owned or operated facilities and large-scale programs for monitoring water quality.

In addition, I can't resist but point out that the extensive supply options that have been the focus of so much of the debate and discussions are going to require federal and state funding. Why assume that the water management programs for the most part are only going to be -- only fall under the purview of local and regional governments. That seems to me an inconsistency, and when you couple that with the fact that there are federal and state programs that can be enormously effective, it seems to me a serious inconsistency.

And, finally, let me note that --

MS. McPEAK: Peter, that's not the assumption. Sorry, that's not -- that's not the assumption. There's not the assumption that the local government or regional level, and I actually don't know what that means unless you have a very large local agency, but there is not the built-in assumption nor should there -- should we let that pass without at least acknowledging that the demand side is going to be funded only by local government.

MR. GLICK: Okay. I stand corrected.

Let me -- what I mean by that is the emphasis in the water use efficiency technical appendix is that most of the effort will be made at the local and regional government level. I do understand -- and I misspoke -- I do understand that there is intended to be some water use efficiency programs even within the CalFed process at the state and federal levels.

MS. McPEAK: And a lot of funding.

MR. GLICK: But the greatest emphasis for implementation for water use efficiency improvements, as it's phrased in the water use efficiency technical component, is for local and regional activities.

Finally, let me just say one more thing, and that is many of the people who refer to -- many people refer to the focus on demand management and water use efficiency issues as the soft path. Now, the term "the soft path" was coined in the late '70s in the energy debate, in the debate over, in particular, building large new power plants in order to address the energy issue. And many of the people who refer to the soft path now in the water area, do so in somewhat of a critical way.

And what I'd like to do is point out that

the soft path on the energy side ended up turning out to be the right path and that it has saved California in particular tens, if not hundreds of billions of dollars by preventing the construction of, and this is -- this was an estimate in one of the Bulletin 160s I think done in the late '60s of approximately 30 nuclear power plants that were planned for the coastal areas of California. They turned out not to be necessary from an energy point of view and turned out more likely to be very expensive from an economic point of view.

As it is, I note that some of the -- some of our -- some California consumers, and everyone who lives in the Bay area falls into this category, is still paying very high rates for those few nuclear power plants that actually were built at that time. And I think the parallel between water use efficiency and infrastructure and energy use efficiency and infrastructure here should be pretty obvious.

Then, as now, getting the numbers right is important and being smart about implementation is a key.

I thank you for your time. I'd be happy to answer any questions if that's appropriate at this

point.

CHAIRMAN MADIGAN: Thank you.

Ann?

MS. NOTTOFF: I'm aware of the time concerns here, it's up to the pleasure of the Chair, but I did want to thank our presenters for very informative and thoughtful presentations.

And I hope that BDAC will take away from these presentations a recognition of the importance of freshwater flows to the Bay-Delta ecosystem and recognition of the hits that system has already taken from diversions, as well as a sense of hope that there are ways of improving water supply reliability that do not require taking more water out of the system.

And it's this phased approach I think that we've talked about that I really think we should be looking for in the -- make sure that that's very clear in the framework agreement that's now under review.

CHAIRMAN MADIGAN: Thank you. I do have a couple of questions and I think we can take the time for it.

Byron and then Alex.

MR. BUCK: Okay. My questions run

across a number of the panel presentations so I'll take them in order, and I don't know if the panelists FROM the first one are here, but just a request on -- we got some graphs on some of the fishing data and I had some questions on that.

One was showing annual commercial fishing revenues 1988 and '98. '98 is not done yet so I don't know if this is a fiscal year figure but it would be nice to have the trend rather than just the two data years. I understand last year was one of the biggest revenue years around.

Also, it would be interesting to have harvest rate data over times shown to BDAC. And also on the second graph where we're looking at the decline in permitted salmon fishing vessels, to have the data that shows what the actual fishing power out there is.

A lot of the smaller vessels have certainly gone out of operation, but a lot of what's left, from my understanding at least, Pacific Coast the larger more efficient vessels. So simply to count the decline in the number of vessels out there doesn't necessarily indicate the level of fishing power out there.

Dr. Luoma, is that right?

DR. LUOMA: Yes.

MR. BUCK: You mentioned the carbon cycle a lot, and I'm wondering if USGS has looked at the decline in carbon inputs that resulted from going to secondary treatment throughout the Bay and the Central Valley, which was perhaps an artificial carbon input that made up for what happened when all the reservoirs were put in. But that was a major change pulling out 85 percent of the carbon that would normally be coming --

DR. LUOMA: Well, that was at least one time that was nutritious, wasn't it.

MR. BUCK: Yeah, it may have been artificially supporting the system. I don't know if any study's really been done on that, but we had a major trend through the late '60s and through the '70s and early '80s --

DR. LUOMA: Right.

MR. BUCK -- on going to secondary treatment which took a lot of carbon out of the system.

DR. LUOMA: I think Alan Jaspe (phonetic) from U.C. Davis has done a study as best can be done on all those different sources. That source, even though it seems big to us, is small

relative to the natural cycle and much smaller than the loss of carbon that occurred as a result of the diking and development of the marshes.

So the marshes are a source that was lost and this is also a source but is a very small one compared to the natural carbon cycle.

MR. BUCK: And then on Peter's presentation, just some perspective issues. I agree with a lot of --

CHAIRMAN MADIGAN: Byron, let me invite any other panelists who are still here to come on back up to the table as well so that we can deal with these questions expeditiously.

Or not.

(Laughter.)

Go ahead.

MR. BUCK: Okay. Just some perspective issues on that. I agree with a lot of what's in his report. We had similar -- CUWA had some similar comments on Bulletin 160 that the institute had, but just to point out that what we're really talking about here is how much conservation will reduce the increase in demands in the future.

And overall, we've got a supply gap right now in dry years of about a million to two million

acre feet. We tend, I think, to forget that we've had four wet years running and we haven't had any shortages, dramatic ones, except for some of the agricultural systems have had. And we needn't lose that fact. As we're growing, we still have the dry-year gap we've got to deal with, and how much we can reduce that gap is really what we're talking about.

Also, recently, certainly we've shown that the urban areas' demands are fairly flat, again, for wet years. Weather effects can have about a 14 percent swing in the average urban demand. So we can consider what we're at today about seven percent suppressed in a wet year over a normalized demand and in a dry year you go seven percent the other way.

So the demands we've had the last four years, although flat, are somewhat masked again by wet years because in wet years you've got lots of local supply and you have lower irrigation demands because a lot of your demands are being met by nature.

The other effect of BMP putting them in, and it's aggressively being done, is that they tend to harden demands. You have less flexibility in the

drought. You can't put a low-flow toilet in twice. Once you've done all the BMPs, your demand's pretty hard and it's very hard to take much more shortage from there without economic damage.

We agree, I think, with Peter that the DWR's baseline, Bulletin 160 baseline for urban demand is overestimated. The AWWA data does certainly show that demands are already below some of the projections because of what's going on.

Outdoor demand is another question entirely. There is not a lot of good data out there. A lot of contradictory data. Some data are showing that, particularly in Southern California, that a lot of people are deficit-irrigating and if they irrigated efficiently their demand would actually go up.

On the other hand, our experts that are actually not theoreticians but are practitioners in the field spending the $50 million a year we're spending on conservation, look at Bulletin 160's projections for the techniques beyond BMPs and they don't think that they will produce the savings that DWR thinks they will.

So on the other hand, while we might -- might think their projections on current demands are

high, where we might go, there's disagreement on how effective that's going to be.

Overall, though, the bottom line is we'd agree that conservation is probably the single most productive strategy we've got in terms of meeting that gap between supply and demand.

Peter mentioned the five measures that were studied in the AWWA indoor or end-use survey. All those BMPs are being implemented here in California, and again, $50 million a year is being spent on those. That's why the demands are down, because we are doing these things. It's not a matter of can we do them, it's not an argument, we're doing them.

These measures, though, aren't sufficient in and of themselves and they're not necessarily cheaper. I would agree that DWR or the Bulletin didn't capture some of the cheaper ones that are being done, and those are being done now. But I know that Peter's report didn't disagree with the upper bound estimate of some of the BMPs and what we call the pre-BMPS that are well over a thousand dollars an acre foot, and particularly CalFed's number was $1600 an acre foot. You asked for the lower bound they put in but they didn't disagree with the upper bound of $1600 an acre foot.

That's very expensive water and if you compare that against some of the more traditional supply side options where we've got reservoirs running in the range of 200 to $400 an acre foot, depending upon whose estimates you want to use, that's still a pretty big gap.

And ultimately, what water districts do is look at how to meet that demand in the most cost-effective manner for their customers, and they'll do what is economically the most feasible first. And that's how the BMPs work. So a lot of them that are 300, $400 an acre foot are doing it now.

A lot of recycling projects that are $900 and $1200 an acre foot are being built partly for other reasons other than water supply. But there's a lot of very expensive water being done or will be done, but in and of itself, it's not the sole solution we're going to have to incorporate.

CHAIRMAN MADIGAN: Thank you.

Alex.

MR. HILDEBRAND: I'll confine myself to one brief comment and one question.

I found some of the things that Peter said here to be persuasive but others not at all

persuasive, unfortunately. I'll ask him to exchange cards with me so that I can debate it with him without taking the time of this whole group.

I, too, believe that the Bulletin 160 is flawed, at least in some degree, in the manners that he suggests. But I think it is also flawed in other respects that greatly underestimate the future demands so that I think the net is an underestimate rather than an overestimate.

But we'll work that out between the two of us and if we don't resolve our differences, I may write a little memorandum on the differences

CHAIRMAN MADIGAN: Oh, good.

(Laughter.)

MR. HILDEBRAND: My question is regarding the circulation in the South Bay. Would it not be helpful in respect to that circulation to induce a tidally driven circulation by just hanging flappers on the San Mateo Bridge so that preferentially let the rising tide in one side and the ebb tide out the other side?

{?}: It's hard to respond to an engineering suggestion like that, but I can say that there have been a lot of engineering solutions proposed for water bodies like this, and their

success rate's pretty small. I think something that simplistic wouldn't have -- I mean just from my initial reaction, but I -- would be that something like that wouldn't have a lot of potential for success. But I would -- you know, you might ask some of the hydrodynamicists to get the specific issue.

MR. HILDEBRAND: Wouldn't cost much to try.

{?}: And it might have some negative effects, too. Again, these things -- nature's complicated.

CHAIRMAN MADIGAN: Peter, you're entitled to a moment if you wish.

MR. CHADWICK: Thank you very much.

Someone said that making predictions is very difficult, especially about the future. I don't know what the future demand in California is going to be. I think I have a little better sense of it than DWR does, I'm embarrassed to say.

But the truth is it depends on -- our future estimates of supply depend on our future estimates of what -- of supply options of infrastructure. It depends on what we think the future demand is going to be. And there's serious

problems with our current way of estimating future demands. And that's one of the things I was trying to get at.

Byron, I agree with you entirely on the issue of data, and particularly in the area, for example, of outdoor landscaping. There's a section in my written comments which I did not say today, there are whole series of data gaps and there are things we don't know that we ought to know. And until we know them, it's going to be really difficult to answer what future demand is going to be, or even what the potential for current improvements and future improvements are.

I disagree, though, about the BMPs. And, in particular, they're extremely limited. The BMPs address a very small fraction of the potential improvements in conservation and, as you well know, they're being implemented at very different rates.

For example, LEDWP has installed hundreds of thousands, if not a million, ultra low-flow toilets. Now EBMUD, my water district, which also has not seen a big increase in water demand in the last 20 years, has installed a few thousand or tens of thousand at most.

Now, there's a big difference in the actual

current implementation of the BMPs. In terms of economics, I don't want you to think that I agree with the upper end of those numbers. I'm not sure what the upper end is. I don't actually care about the upper end. My concern is the lower end.

What's the potential for demand management at zero dollars -- and there is some, fixing leaks, for example -- what is it at $100 an acre foot? If you spend $100 an acre foot or $200 an acre foot, what is the increment of conservation improvements you get for different expenditures up to the point where you're buying water transfer, where you're getting -- you're spending money for water transfers or you're buying an isolated Delta facility or whatever.

Those are the kinds of comparisons we have to make. And I'm concerned with the problems at the bottom end.

CHAIRMAN MADIGAN: Thank you.

Sunne.

MS. McPEAK: It's hard to know where to begin on responding. Yesterday, Martha and I had a little bit of a discussion and I said I actually don't care about the numbers. I care a lot about numbers when they matter, when they're actually

going to drive a decision.

My approach on the CalFed challenge is that we're actually not sitting here attempting to meet California's water needs. We're sitting here trying to fix the Bay-Delta estuary.

Now, I care about those numbers in terms of our performance standards, what we're going to take as success when we restore the estuary. But I sort of made a little bit of a career out of dispelling the projections in Bulletin 160 15 years ago. They're a little better today, but actually they don't matter in my opinion for what we're doing in this arena.

I want to -- I want to just elaborate. We could have a long discussion. They should not matter because of the following: It should be our commitment, and it is certainly the position of the people I represent, that we want absolute maximum efficiency from the current supply.

Now, what we should argue about is how to do that and what that means. And in fact, I have some pretty interesting discussions with my own members over are we going to do that at any cost. And we have sort of reached a compromise of using the word not maximize but optimize.

But it would be at a pretty high level before we would, I think, back off and say that's not optimizing the demand management or efficiency because we also embrace another notion which we call a water ethic that we just don't want to do any more development than is necessary. It's simply a matter of commitment to the environment.

So I think the Bulletin 160 numbers are interesting, maybe they're wrong, they probably are high, but it almost should not be a matter of anything in this process except for the evaluation in the EIR/EIS, not driving a policy decision about do we choose demand management or efficient water use over construction.

We have to optimize, in our opinion, the current use of the existing supply, or the use of the current supply.

And so I would hope that -- at least that's my approach, and maybe, Lester, you can comment on this -- we could avoid so much debate over the demand numbers or the per capita consumption but rather over the efficiency that -- the efficient measures and how we get to that efficiency in this arena.

Because the actions that would be in that

framework would be more about what is going to be done at the local level, and by the way, not just at the local level. We would argue for, have commented on, have suggested and would look for in a final framework, very significant carrots, carrots big enough to be sticks, and sanctions for implementing the most efficient water use in that there's no access to additional water supply.

We've even suggested before the State Water Resources Control Board that it be taken into account in water rights proceedings. Those are fairly significant kinds of measures. You can amend bond covenants. There's a whole lot of other things that would be done at a statewide level or at a higher level than local to encourage, reinforce, reward those actions that we say have to be implemented locally.

Because I don't really envision the state coming in and putting toilets -- new toilets in everyone's home. I do see that as being the responsibility of a local level.

So, could you, Lester, comment -- are you on the same page that I am or am I just out to lunch on this one?

(Laughter.)

MS. McPEAK: And if we're -- if we're close -- they all want to get out to lunch.

CHAIRMAN MADIGAN: Think about your answer here.

MS. McPEAK: Yeah. And if -- and if we are close, if you think that what I've just said represents the spirit of how you're approaching this, then how are -- how do you think we're going to better convey what we're about and not have this interminable argument over their numbers on consumption?

MR. CHADWICK: Can I --

EXECUTIVE DIRECTOR SNOW: Yes. Okay, then I can think of my answer.

MR. CHADWICK: Lester, it will give you a chance to --

CHAIRMAN MADIGAN: Go ahead.

MR. CHADWICK -- gather your wits.

I agree in fact that is the page they're on. I think yes is the right answer, Lester, and you are thinking about this the same way. And I would love it if this were not a debate about the numbers. But I want to say one more time why the numbers are important.

I would rather this not be a debate about

the numb -- the potential and about DWR.

MS. McPEAK: And I understand the modeling. I understand what you said, that the modeling is all based on those assumptions.

MR. CHADWICK: The modeling for how much water needs to be delivered where and when, the modeling assumptions for where the flows are going to be over the next two decades, depend fundamentally on the assumptions put into them about future demand for water.

And if the demand for water in the future is overestimated, either because of a methodological problem or a number problem or whatever, then the modeling numbers and the costs of options, the economic risk model work, the DWR work, is all going to be wrong.

The numbers are fundamental here and we --

MS. McPEAK: I even accept that, Peter. I even accept that, accept the numbers that are more important than with respect to the fish. And I want to ask Zeke a question, really is where -- how much water went for the fish?

That's actually -- those are actually very important numbers as far as I'm concerned. And we have a pretty simple way of proving whether or not

some of these facilities are going to be needed. We're going to have to work like hell to get this -- all these BMPs implemented and then people either put up money for facilities or they don't.

I mean, as we go forward, we have a new paradigm on how we're funding facilities. I -- I actually think that that would be a pretty interesting way of getting -- getting to the core of how valuable are certain actions, and you couple that with an expanded water market, and we're home there.

I mean, that's very simple-minded, I understand how I just -- you know, that I laid it out in that way. But there are certain numbers I think that are important. The modeling by and large that's been done is ignoring the most fundamental number, which is how much water went for the fish. Not where are we likely to see inputs because of demand.

That's my comment.

Zeke, what happens, when is it that you see the real stress on the fisheries. I mean low rainfall, but how long did the fisheries tolerate it?

MR. GRADER: Let me just go through.

Generally, unlike an agricultural crop where you see the impact that year, for us in fisheries there's a three-year delay, generally three to four years. That's the maturation rate of the fish when they become available for harvest.

So, for example, following the '82-'83 El Nino and the very wet years that followed that, going on up through the spring of '86, we had a record or near record production beginning in '86, '87, '88. '88 was the best year ever for our ocean fishery. And that's because we had very good water conditions.

At the same time, we were warning in '87 and '88 that the fisheries were going to start to take a decline, which in fact they did. And we saw that particularly in 1991 when we fell from -- down to 1.5 million acre feet.

Now, there are those that would like to say, "Well, there must have been too much fishing effort" or this or that. I should point out that during '87 and '88, during those record years, we also met or exceeded the spawning escapement goals, the number of fish we needed to get back for optimum escapement. And that's been ongoing.

What we had last year, which Mr. Buck was

saying we had a record year last year, we didn't have a record year last year. We had treble the amount of fish we had for optimum spawning escapement mostly because of other restrictions that were placed on the fisheries. In other words, the fishery has been restricted but we've had the number of fish getting back.

Now, I know there are a lot of people that want to deny that. People denied the holocaust too, but that don't make it so, you know, that it didn't happen. And that's the problem.

Those figures are out there and it's pretty clear, and people want to keep skirting around it, when you add water to the mixture, when you have water in those rivers and through the Delta, fish production is good. When you don't have it there, fish production goes down.

Now, that's not absolute. This year obviously we're -- we're seeing the impact of the El Nino. This otherwise should have been a good year. What we're seeing right now is the numbers are down somewhat and the fish appear to be stressed. That's because of an oceanic condition. But absent an El Nino, that's generally the trend. And it's not just in the Central Valley system. We

see it in the Klamath Trinity system as well.

MS. McPEAK: And then what is the recovery time? Is it also a three-year delay?

MR. GRADER: It's roughly that so -- and that's what we saw. The fish we saw coming back last year where we came off a wet year. The year prior to that, they came off a dry year, production was down. The year before that, they came off a wet year and the production had been up. Generally, you know, tracing it back three years, generally we're looking at harvesting three -- primarily three-year old fish and some four-year-olds. And that's the trend.

Now, I should say that people ask, "Well, what about the fishing power, hasn't that increased?" Fishing power's gone down because, frankly, most of the people that had to rely on fishing full-time, not just as their summer, if they were schoolteachers or whatever fishing during the summer, have had to go into other fisheries because they couldn't rely on salmon.

So in fact, most of the vessels we're having are the smaller vessels that are less effective that the -- certainly the hardest index has gone down. That is power -- how they measure

the effectiveness of a vessel out there and the trend has been down. It's clear that the numbers are there. And, frankly, I don't know why we're still debating that except we're still debating the holocaust, too, with people.

You know, the numbers are there. It's clear. And the problem is is that there's just a certain element in our society that doesn't want to acknowledge what in fact is happening.

CHAIRMAN MADIGAN: Thank you.

I have Roberta, then Alex and then those are the last two.

Lester, did you want to expand on your earlier comment?

You do.

EXECUTIVE DIRECTOR SNOW: Yes.

CHAIRMAN MADIGAN: Sure, do that now. Go ahead. You've had a chance here to think about it.

EXECUTIVE DIRECTOR SNOW: Yes, I agree.

CHAIRMAN MADIGAN: Okay, that is an expanded answer.

(Laughter.)

EXECUTIVE DIRECTOR SNOW: No, I don't want to be too flippant about it. But I think the

way that Sunne described it is the way that we've tried to structure this issue, and I think -- I think there's one area that we all agree on: All projections are wrong. I mean, that's just the way that they work out. There is not a projection that ever comes out right on the money.

And I think the issue, maybe it's where I have some disagreement with the way that Peter would characterize it, I think we can look at different demand levels. We've attempted to do that and it's probably -- certainly not clear in some of the stuff that we've laid out.

I think we're finding, particularly the way that we're going with developing a preferred alternative and starting to apply principles of adaptive management to storage and conveyance, that the way you approach this, your preferred alternative is getting to be relatively insensitive to changes in future demand of a million, million and a half, maybe even two million acre feet in terms of how you're going to set forth to correct the problem.

That's not a statement to be an excuse to not try to get the best projections that we can get. It's just questioning how sensitive this approach

that we're developing is to those 2020 numbers, particularly when you start applying adaptive management to storage and conveyance.

CHAIRMAN MADIGAN: Thank you.

Roberta?

MS. BORGONOVO: To go back to the first discussion we had yesterday, and that is, what would happen to all the comments that came in. What I heard Peter and Zeke and Sam doing is adding to our knowledge of the way in which we approach the problem.

So I think it's very important that those perspectives be incorporated and that CalFed's new preferred alternative take into account some of the discrepancies or lacks of knowledge that were there when the initial EIR/EIS was done.

CHAIRMAN MADIGAN: Thank you.

Alex?

MR. HILDEBRAND: I agree with Peter. I think the numbers are important even though they're very difficult to arrive at. You can't divorce the question of taking care of all these things we're talking about in the estuary from the question of the inflow of the estuary. And that relates to the demand.

We've had a whole parade of panels here this weekend and every one of them has bragged about how efficient they are, but everybody wants more water. And, you know, Santa Clara wants 50,000 more acre feet to be taken from agriculture in a dry year, and you can talk to any one of these urban organizations and they'd tell you how great they are in efficiency, but they all want -- are all planning to take more agricultural water away from the growth of food to produce something else.

We need more water for the fish downstream. We need more --

(End of tape)

MR. HILDEBRAND: You can't do all those things if you don't have the water. And the amount of water you have available to do them depends on the inflow to the Delta. So you do have to look at the demand.

Now, I differ from Peter in that I think the Bulletin 160 is in error, if you look at it in aggregate, in that I think that they're low in their demand figures whereas he thinks they're high. I think that there's a balance here. Some things are low and some are high. But we can argue about that later.

But I just can't see how you can say that the overall water supply doesn't have to match the demand somehow or other. It's got to or it won't work. We can't reach these environmental goals if we don't have the water. And if the environment has to compete with the motherhood stuff and the food and so forth, it isn't going to win out. If we want to save the environment, we've got to have enough water to do it.

CHAIRMAN MADIGAN: Thank you.

Martha.

MS. DAVIS: I realize this is not an easy discussion to have, particularly raising some of these questions about baseline issues that go to the heart of the EIR/EIS analysis and the implications of how much -- how well we understand both the definition of the problem that we're trying to solve and what a reasonable investment that we need to make in our future to solve those problems.

I think the concern that I've got is that as I look at the package of things that need to be part of this preferred alternative, we're also talking about ultimately a certified EIR/EIS and environmental impacts that will -- statements and documentation that will tier off the assumptions

that are contained in this analysis.

And so as difficult as this discussion is, it's an important to have because the numbers count. They count now and they count 20 years from now in terms of the overall issues that we're facing.

I strongly support the statement made by Elise this morning that we do need to take very seriously what we can do for everybody to try and make the Bay-Delta work now, to try and work around the current situation so that we're not making things worse. And that's looking at everybody together.

I think we also need to be thinking about how we can craft this interim plan and the preferred alternative. And I think you're right, Sunne, in terms of looking at conservation programs and things like that, I am far more interested in just doing it and not arguing about numbers near-term or long-term.

But I think that we somehow have to find a way to piece this together so that we can have a preferred alternative and an interim plan that allows us to move forward with all of the commitment that we've brought to this table that still acknowledges that there may be some parts of the

EIR/EIS analysis that have to be untangled in order to have a document that can be appropriately certified at the end of this process.

MS. McPEAK: And not go through litigation, I stipulate to that.

CHAIRMAN MADIGAN: Thank you.

Brian.

RYAN: Thank you, Mr. Chairman, I'll try to be brief on two quick points.

First, I think the issue that's been raised by both the commercial and recreational fishing interest as underscores what we've discussed for the last two days, try to maintain a balance of beneficial uses whether they relate to urban or ag supply, recreation is a beneficial use of water. It is an issue that folks have paid a tariff on in the commercial and recreational side of the equation since 1911, I believe, on the fishing licenses and on landing taxes from the commercial perspective.

The folks that participate in the recreational fishery are kind of providing a day-to-day pulse on the health issues that we talked about in terms of establishing, you know, the flows, whether it be the carbon, whether it be the phytoplankton, the restoration processes on tidal

marshes.

And it may not come to the basic necessities that we are debating here as it relates to do we have food for our tables, do we have basic water for health and safety, but it does come to the issue of once all those are met, does your soul feel good in the afterhours.

And the other issues with respect to the tidal -- the tidal wetlands issues, $20 million over 20 years to try to establish form and function in an environmental study that allows for the protection of a whole variety of species is absolutely a critical issue.

But, please, let's not lose -- lose sight of the fact, as Nancy Schaefer referenced, the new gate going in the Shell Marsh -- and, Sunne, I think you and I both remember a time when there was three feet of oil in that marsh -- that those -- that expanse of acreage is going to require not just the purchase and abandonment, but the purchase and the management and the care.

And that is a long-term, long-standing operations and maintenance issue, on two issues: Maintaining the form and the function and providing the interpretation so that when folks visit that

marsh and see what has been invested in it, that they can relate to it as a benefit, just as they do when they turn the tap on and they get water, just as they do when they can eat some good corn out of the Delta.

So in summary, that's it.

MR. GRADER: Ryan, let me if I can, just state one thing, though, which is a little bit troubling to me what you just said. You talked about the fisheries as being recreational. First of all --

RYAN: I referenced commercial, too, Zeke.

MR. GRADER: Yeah, but keep in mind, and I think people tend to forget this in all the debate, is that we fed the miners when they came here, the '49ers, in 1849 and '50, we fed them primarily with salmon. That's how our salmon fishery got started. That is food. Don't ever forget that that is food.

And from the recreational standpoint, those people aren't just going out there having something to kill. The salmon's not a mountain lion where, you know, you get off on showing you're macho by killing an animal. Generally, they're eating them.

So there is a benefit there, too, from it.

So don't ever, ever forget that that fish is food. In fact, that was our fish -- first big crop here in California with the coming of the white man.

CHAIRMAN MADIGAN: Thank you.

I have -- Sunne.

MS. McPEAK: A question on -- on the wetlands, the -- that Ryan triggers based on Nancy's presentation, which that is excellent work and for the record, right after saving this estuary, the highest environmental challenge we see in the Bay area is the restoration of wetlands and getting them back to something that is on the magnitude of what we originally had.

But the -- but I don't know, Lester, and I don't know that it's been well pieced out in our work is the relationship of those wetlands to the ecosystem by ability of the fisheries, which is one of the leading indicators. And we have an argument in the Bay area about whether or not it too should be funded all here. We're prepared to fund -- I mean, we're prepared to support funding of it. We don't know if that should be -- what portion of it should be in terms of wrapped into CalFed.

So Eric's holding his head, he can tackle that one, too, in the finance committee.

But do we know, in terms of the biological connections there, how much would really -- should be incorporated into the CalFed project and how much of that should be done perhaps as part of a regional -- another regional funding package?

EXECUTIVE DIRECTOR SNOW: Yeah. Actually, the round table process, the current money we have access to, the Bay is eligible to submit, they must show a connection to the problems in the Bay-Delta system, and we have, of course, funded North Bay projects.

MS. McPEAK: Right.

EXECUTIVE DIRECTOR SNOW: And I think the most direct answer to your question is that it clearly has established that corridor, particularly for salmon, all the way through the system. And so you can envision an enhanced corridor in -- along the Sacramento River, in the Delta, Suisun, North Bay, as they migrate out, the kind of habitat that's necessary for that.

MS. McPEAK: In South Bay, somebody has to demonstrate the connection, is that it?

EXECUTIVE DIRECTOR SNOW: Correct. I

mean, actually -- literally, the way that the South Bay is included in a program that's very similar to the way we've included the Sierra Nevada in terms of the watershed-management based approach.

CHAIRMAN MADIGAN: All right. Thank you.

We have two speaker slips. Thank you very much, panel, I appreciate it. You hung in here a long time. You've given us a lot to think about and we're very grateful for that.

The first speaker slip is from Peter Grinell (phonetic), General Manager of the San Mateo County Water District.

Good afternoon, sir, thank you for your patience.

MR. GRINELL: Good afternoon. Thank you. It -- I need to make a slight correction. It's the San Mateo County Harbor District. And I'm --

CHAIRMAN MADIGAN: Sorry about that. Talk about --

MR. GRINELL: No problem.

I'm here to put in a word about fish and money. I would like you to expand your perspective to consider as you grapple with the issues of how to

fix the Bay and Delta, and whatever the impacts of vehicle tax on continuing the (inaudible) shift are on your abilities to accomplish anything, to consider the following impacts of a decline in major salmon fishery in particular and others as a result of problems within the Bay and Delta system.

First of all, lower catches, lower abilities for the fishing fleet, a great segment of which operates out of our Pillar Point Harbor at Half Moon Bay, has the following economic impacts:

Not only not do the individual fishermen themselves sustain direct impacts in terms of no income and increased liability on their ability to pay off the considerable capital investments they have in their vessels and the equipment, but there are other factors as well that affect, for example, the state budget and the state fiscal condition.

Our harbor and most of the harbors on the coast have significant debt to the State of California through the Department of Boating Waterways which financed the construction of those facilities. Our ability to pay off those loans is directly related to our ability to gain revenue primarily from berthing fees.

In our harbor, the major segment is the

commercial fishing fleet. Fishermen don't work, they don't pay their berthing fees. We send them 30, 60 and 90-day notices, put their boats on lien sale if we have to. That's the law.

We cannot pay off our debts. We're sitting under a three-year moratorium right now with the department in our ability to pay off these debts. That has a direct bearing on the state's budget and the state's available funding for various kinds of things, including fixing the Bay-Delta.

Second, there are direct implications negative on our harbor facilities, which are public facilities. Deferred maintenance, our ability to keep the docks operating and safe for the public. In fact, we are considering now a complete inspection of our facilities to identify and rank those repair items that we must attend to. Otherwise, our insurance rates go up.

There are safety problems as well relating to these facility concerns. Again, to the extent that the fishermen cannot operate, cannot catch fish, there are significant economic impacts and employment impacts, all negative, on the local and regional economies.

The commercial fishing industry -- I'm not

sure you're aware of this -- has among the highest employment multipliers of any industrial sector. Directly off the boats, it's roughly three to one. Every fisherman on a boat generates up to three other jobs. If you include the on-shore handling, processing and distribution facilities, the employment multiplier is up to as much as eight to one. That relates to cooks and waiters in restaurants, salespeople in the supermarkets.

There is therefore a very extensive spread effect, adverse, when you do not have a healthy fishing industry. And, essentially, the burden of my statement here, which I will now draw to a close, is that there is a direct bearing on these considerations in what you do with the Bay-Delta system. Because that has a direct implication, as Mr. Grader has indicated, on particularly the salmon fishery, which is the major north and central coast fishery.

And so I ask you to bear that in mind and consider how, in your various alternative deliberations, you can come up with mechanisms that will in fact address that issue.

Thanks.

CHAIRMAN MADIGAN: Thank you, sir.

Thanks again for your patience.

Michael Warburton (phonetic).

Mr. Warburton, good afternoon.

MR. WARBURTON: Thank you.

I'm thinking that I'm very encouraged by the entire CalFed process to give attention to environmental restoration, and in the process I think numbers do count.

One thing which hasn't had any numbers are some impacts on public trust values and resources in the State of California. It hasn't been part of the discussion, but parts of Zeke Grader's account of the impacts on fisheries really struck an echo in my mind because there is a California public trust interest in fisheries and wildlife. And I don't feel it's been either quantified or assessed by the CalFed process.

And as resources and ecosystems decline, I think the base numbers for wetlands and fisheries are closely related to an understanding of what the California public trust interest might be in its ecosystems. And also as a citizen, while different options for water supply are being considered, I'm concerned that California citizens might be put in the position of actually buying back their own

public trust. And I think this is a situation which CalFed hasn't adequately assessed.

In any case, as a California citizen, I'd like to see some sort of attempt to take a look at what the public trust might mean to this. It's part of California law. It's been largely forgotten by the courts and it's a dangerous place even to bring it up in the courts, but I think it should be part of the public discussion of this CalFed process.

Thanks.

CHAIRMAN MADIGAN: Thank you, sir.

That's all the speaker slips I have. Congratulations to the survivors. Thank you all for your interest and attendance. We're adjourned.

Oh, next meeting September 10th and 11th in Stockton. See you all there.

(The meeting adjourned)

TRANSCRIPTIONIST'S CERTIFICATE

This is to certify that I, SUSAN PORTALE, transcribed the tape recorded meeting of Bay-Delta Advisory Council Meeting, taken on July 17, 1998, fully and correctly to the best of my ability; and that the pages numbered 1 through 206 constitute said transcription; that the same is a true and correct transcription of the tape recorded interview of the aforesaid, to the best of my ability.

Dated August 10, 1998.

Susan Portale

SUSAN PORTALE

Transcriptionist

LAWYER'S NOTES

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